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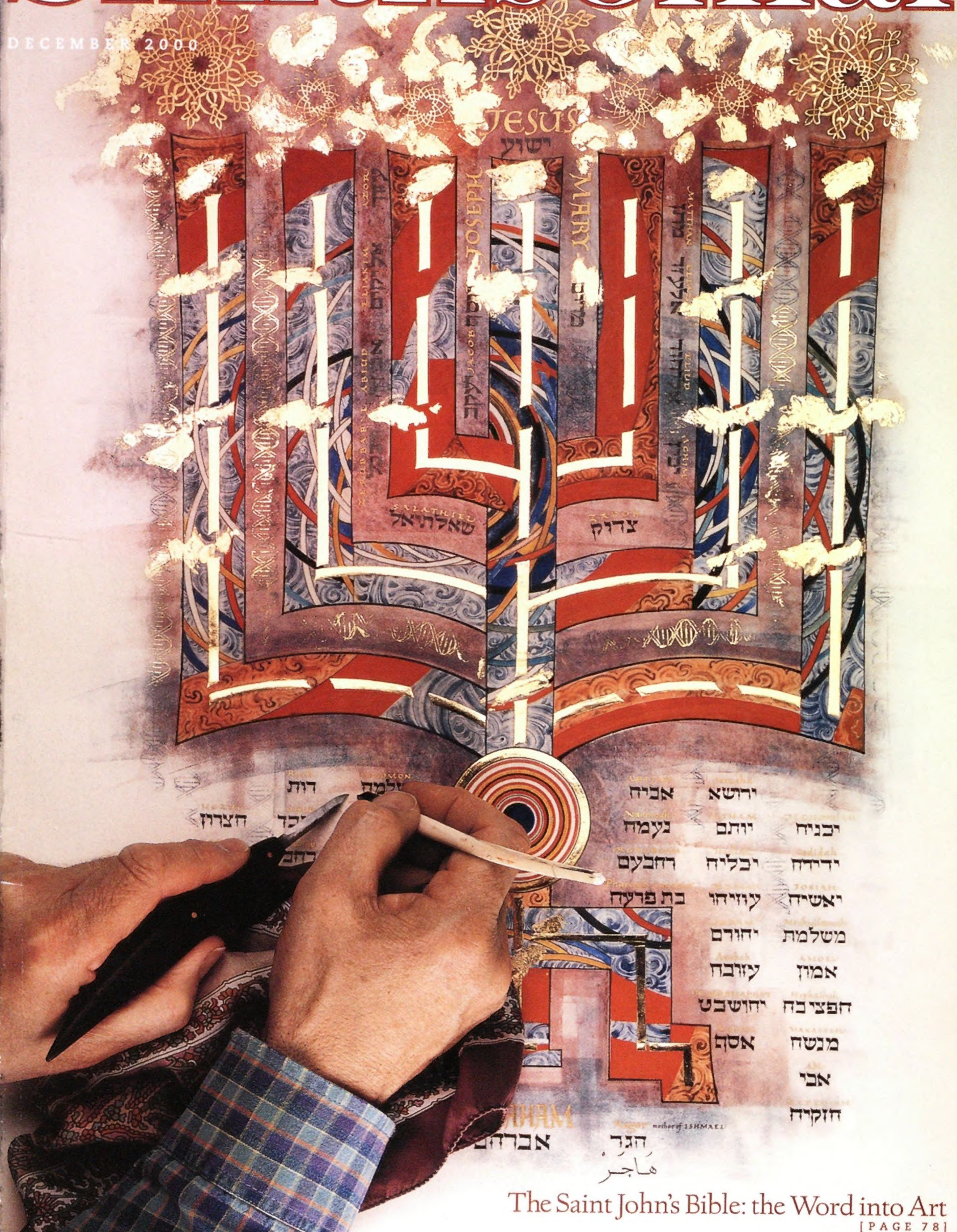

The Saint John's Bible: the Word into Art

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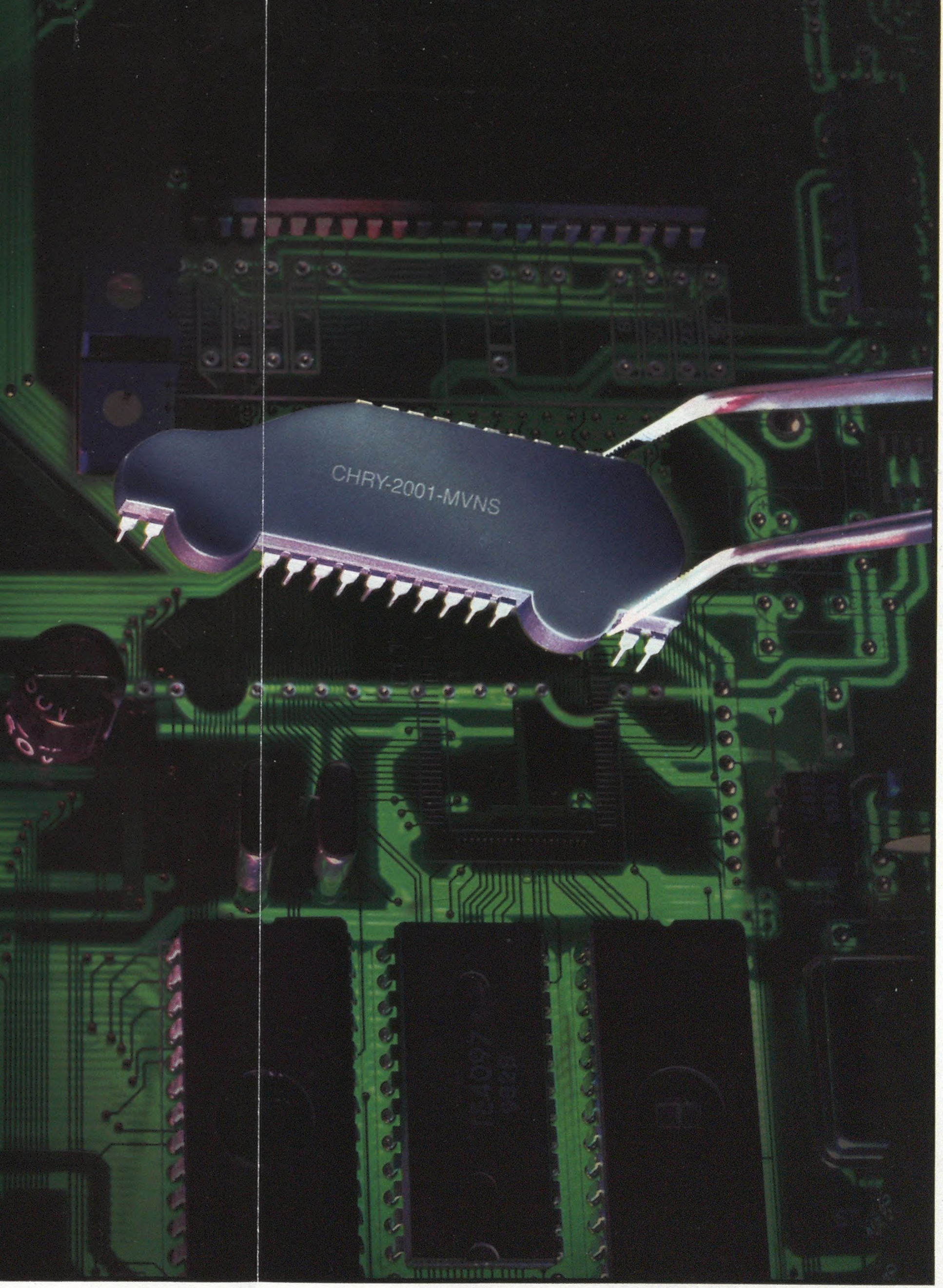
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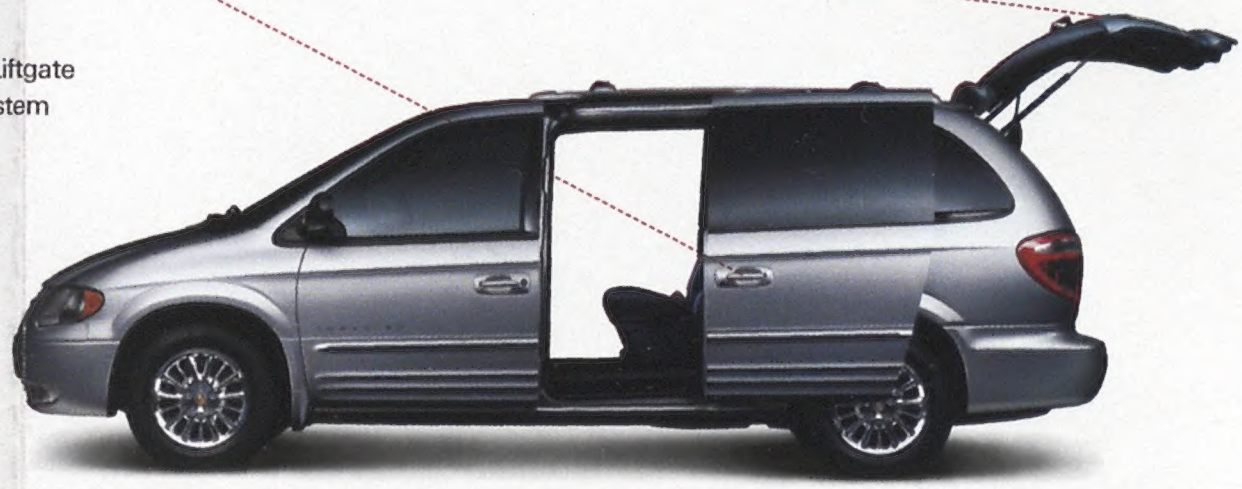

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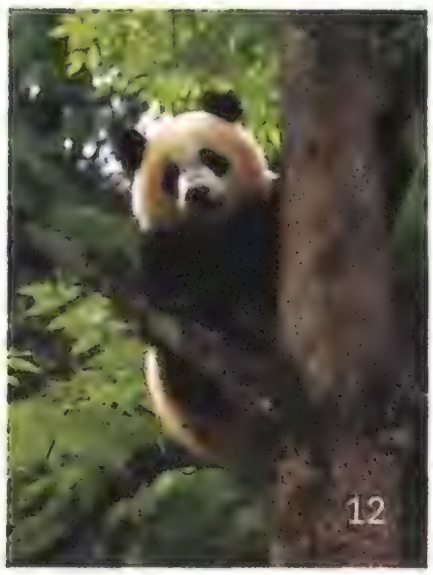

Cover Calligrapher Donald Jackson, quill and ivory pointer in hand, puts the finishing touches on the first completed page of The Saint John's Bible. The illumination depicts the genealogy of Jesus as told in the Book of Matthew and uses a menorah to illustrate Christ's family tree. Intertwined in the illumination are tree branches, strands of DNA, and English, Hebrew and Arabic names.
PHOTOGRAPH BY MICHAEL FREEMAN

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Bathing in hot springs is very popular among the Japanese, who often drink the water from iron springs for their health.

Iron and Hot Springs

By Tomio Hirano

Japan is the world's foremost hot springs country with over 21,000 sources, including 2,600 hot springs resorts, because of its location on the volcanic rim of the Pacific. These springs are at least 77°F or have significant mineral content, solids of at least one gram in one kilogram of water.

Some springs are designated as iron springs, and they have over 20 milligrams of iron ions (Fe^{++} and Fe^{+++}). Iron springs can be divided into two types, iron carbonate springs and acid vitriol springs. The Ikaho Springs in Gunma Prefecture are famous for containing mainly iron (Fe^{++}) bicarbonate. The other type, those originating from active volcanoes, have strong acidic properties, such as the Fukushima Prefecture's Dake Hot Springs, which contain mainly iron (Fe^{++}) sulfate.

Our bodies contain about three grams of iron. Three quarters of this is in the hemoglobin of our red corpuscles. A shortage of iron leads to anemia. About 10 milligrams of iron are lost daily through urine and perspiration. There is usually about an equal intake in the form of food. A diet rich in iron is healthy, and drinking iron spring water is an effective remedy for anemia, although its unique taste can hardly be described as delightful. Perhaps the proverb, good medicine tastes bitter, applies here.

About the Author:
Tomio Hirano graduated from the Department of Technology at Doshisha University, and became a Doctor of Science at Tohoku University. His specialty is the geochemistry of hot springs, underground water, and hot water. He currently heads Kanagawa Prefecture's Hot Springs Areas Research Institute.

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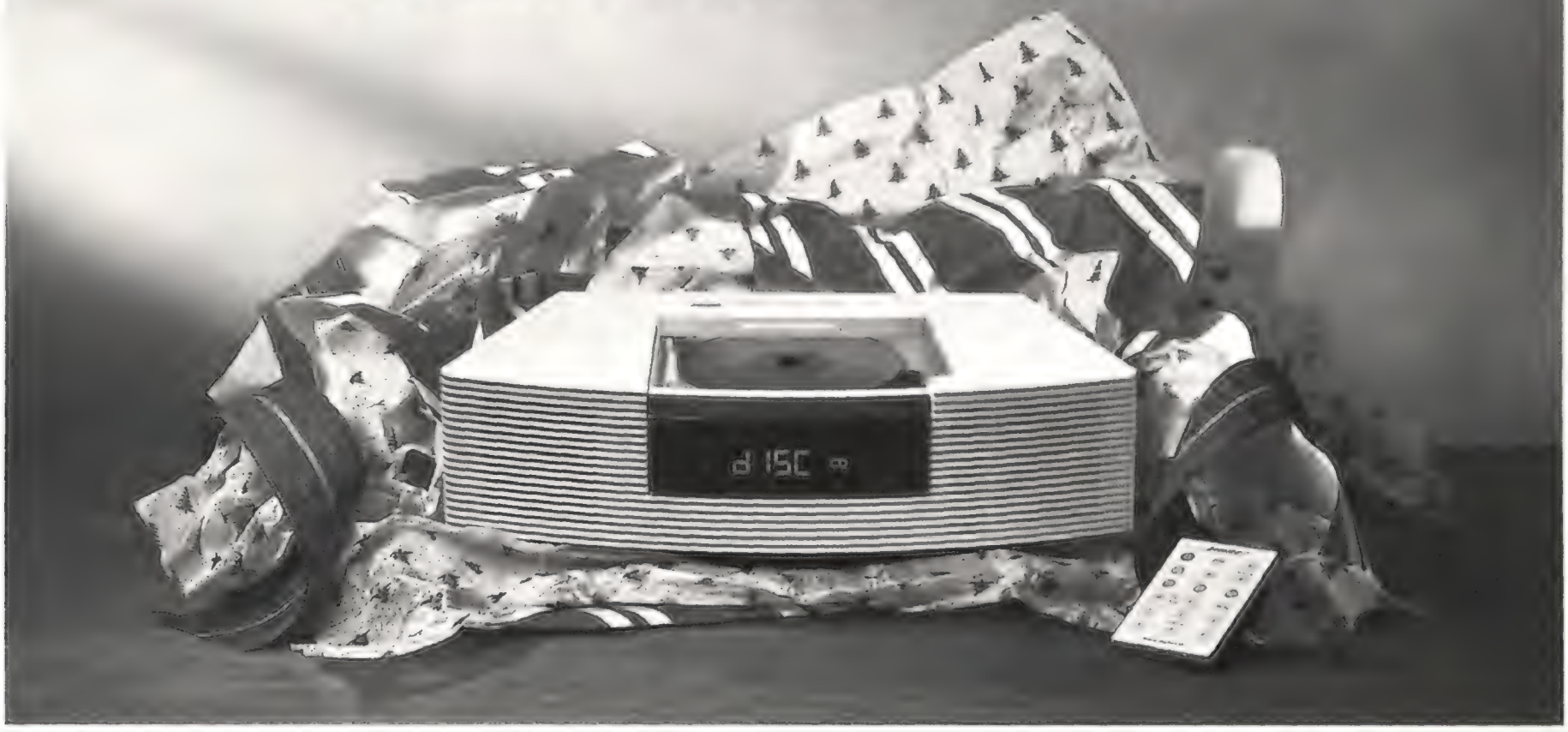

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The Liveliest Museum

A NOTE FROM THE SECRETARY

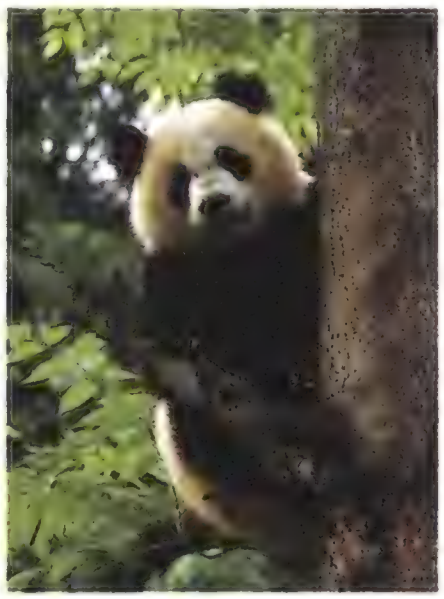
"LIONS AND TIGERS AND BEARS" IS WHAT DOROTHY AND her friends in Oz called them, in a nervous chorus. "Charismatic megavertebrates" is how Dr. Lucy Spelman, the recently appointed director of the Smithsonian's National Zoological Park, refers to them, and for good measure she includes in their number, among other species, elephants, giraffes, hippos, gorillas, sea lions, crocodiles and bald eagles. She's speaking of the animals that attract most families to zoos in the first place, the ones from so many of the earliest stories we're told as children. Dr. Spelman wants the National Zoo to be a model environment for charismatic megavertebrates—and for all the other species that share 163 green and hilly acres in the heart of Washington, D.C.

Zoo director Lucy Spelman is preparing for the arrival of panda Mei Xiang and mate.

Before being named director last June, Dr. Spelman was chief veterinarian in the Zoo's Department of Animal Health. A specialist in the growing field of zoo medicine, she has developed anesthetic techniques for problem species such as otters and sea lions, and was the first scientist to publish research on anesthetizing Komodo dragons. She's at the forefront, as well, of efforts to devise treatment options for geriatric zoo animals. That's an essential concern, because animals live far longer in zoos, where they are carefully tended, than in their natural environment.

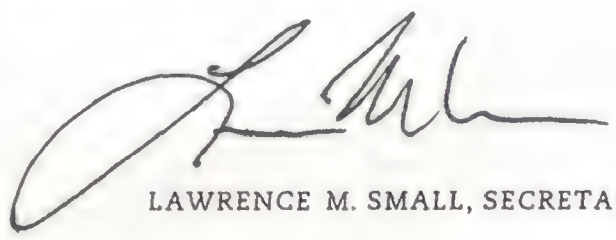
As chief veterinarian, Dr. Spelman began a systematic preventive medicine program for the Zoo's long-lived species. The animals have access to the latest diagnostic tests and medications (and to a degree of affection from Dr. Spelman and her staff that no doubt speeds the passing of many illnesses all by itself). During "ursid month," for example, the bears get their physicals, vaccinations, nail care and dental exams. Felids (cheetahs, lions, tigers), canids (wolves, foxes) and mustelids (otters, ferrets) have their own turns in the rotation. The great apes—the orangutans and gorillas—even undergo cardiovascular monitoring. Visitors to the Zoo rarely see this daily behind-the-scenes concern for the animals.

Zoos are museums exposed to the seasons, and what's most precious in them breathes and won't hold still. That immensely complicates the daily responsibilities of management and maintenance. Traditional museums are committed to showing their collections to best advantage—in a context, with an annotated identity. But a painting on a gallery wall is bounded by a frame, a precious gem by the dimensions of a case. Lions need a landscape, a living context, as do all zoo animals. By creating environments congenial to each species, Dr. Spelman and her staff are working to display to best advantage a collection that boasts horns and hooves and scales and hearts, and all the other attributes and susceptibilities of living creatures.



The high caliber of the environmental standards at the Zoo (and those for public display) will be apparent when the most charismatic megavertebrates of all—a pair of giant pandas from China—arrive shortly. Dr. Spelman has been overseeing the preparation of a renovated home for the pandas. Their indoor quarters have been brightened by murals of their native mountain homeland. And their outside yards are now generously proportioned, sloping gardens, outfitted with a host of panda-friendly options: ponds; sand wallows; live trees for shade; bamboo; giant dead trees, spiky with limbs for climbing; two massive grottoes, open to visitors' view, to provide cool air in summer; and a fogger and a mister to produce the moist air that's naturally agreeable to the animals.

Thanks to the creativity, care and devotion of Dr. Lucy Spelman and her team, for years to come, visitors will find here in the nation's capital a green swath of landscape utterly transformed by the casual motion of two black-and-white bears.



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ZOCOR®
(SIMVASTATIN)

PLEASE READ THIS SUMMARY CAREFULLY, AND THEN ASK YOUR DOCTOR ABOUT ZOCOR. NO ADVERTISEMENT CAN PROVIDE ALL THE INFORMATION NEEDED TO PRESCRIBE A DRUG. THIS ADVERTISEMENT DOES NOT TAKE THE PLACE OF CAREFUL DISCUSSIONS WITH YOUR DOCTOR. ONLY YOUR DOCTOR HAS THE TRAINING TO WEIGH THE RISKS AND BENEFITS OF A PRESCRIPTION DRUG FOR YOU.

USES OF ZOCOR

ZOCOR is a prescription drug that is indicated as an addition to diet for many patients with high cholesterol when diet and exercise are inadequate. For patients with coronary heart disease (CHD) and high cholesterol, ZOCOR is indicated as an addition to diet to reduce the risk of death by reducing coronary death; to reduce the risk of heart attack; to reduce the risk for undergoing cardiac procedures (coronary artery bypass grafting and percutaneous transluminal coronary angioplasty); and to reduce the risk of stroke or transient ischemic attack (TIA).

WHEN ZOCOR SHOULD NOT BE USED

Some people should not take ZOCOR. Discuss this with your doctor.

ZOCOR should not be used by patients who are allergic to any of its ingredients. In addition to the active ingredient simvastatin, each tablet contains the following inactive ingredients: cellulose, lactose, magnesium stearate, iron oxides, talc, titanium dioxide, and starch. Butylated hydroxyanisole is added as a preservative.

Patients with liver problems: ZOCOR should not be used by patients with active liver disease or repeated blood test results indicating possible liver problems. (See WARNINGS.)

Women who are or may become pregnant: Pregnant women should not take ZOCOR because it may harm the fetus. **Women of childbearing age should not take ZOCOR unless it is highly unlikely that they will become pregnant.** If a woman does become pregnant while on ZOCOR, she should stop taking the drug and talk to her doctor at once.

Women who are breast-feeding should not take ZOCOR.

WARNINGS

Muscle: Tell your doctor right away if you experience any unexplained muscle pain, tenderness, or weakness at any time during treatment with ZOCOR so your doctor can decide if ZOCOR should be stopped. Some patients may have muscle pain or weakness while taking ZOCOR. Rarely, this can include muscle breakdown resulting in kidney damage. The risk of muscle breakdown is greater in patients taking certain other drugs along with ZOCOR, such as the lipid-lowering drug Lopid (gemfibrozil), and other fibrates; lipid-lowering doses of niacin (nicotinic acid); Sandimmune (cyclosporine); itraconazole, ketoconazole, and other azole antifungal drugs; the antibiotics erythromycin and clarithromycin; HIV protease inhibitors; and the antidepressant nefazodone. Interruption of therapy with ZOCOR should be considered if you are going to take an azole antifungal medication, such as itraconazole, or macrolide antibiotics, such as erythromycin. Avoid drinking large quantities of grapefruit juice (more than one quart daily) while on ZOCOR. The risk of muscle breakdown is greater in patients with kidney problems or diabetes.

Because there are risks in combining therapy with ZOCOR with the products listed above, your doctor should carefully weigh the potential benefits and risks. He or she should also carefully monitor patients for any muscle pain, tenderness, or weakness, particularly during the initial months of therapy and if the dose of either drug is increased. Your doctor also may monitor the level of certain muscle enzymes in your body, but there is no assurance that such monitoring will prevent the occurrence of severe muscle disease.

If you have conditions that can increase your risk of muscle breakdown, which in turn can cause kidney damage, your doctor should temporarily withhold or stop ZOCOR. Also, since there are no known adverse consequences of briefly stopping therapy with ZOCOR, *treatment should be stopped a few days before elective major surgery and when any* major acute medical or surgical condition occurs. Discuss this with your doctor, who can explain these conditions to you.

Liver: About 1% of patients who took ZOCOR in clinical trials developed elevated levels of some liver enzymes. Patients who had these increases usually had no symptoms. Elevated liver enzymes usually returned to normal levels when therapy with ZOCOR was stopped.

In the ZOCOR Survival Study, the number of patients with more than one liver enzyme level elevation to greater than 3 times the normal upper limit was no different between the ZOCOR and placebo groups. Only 8 patients on ZOCOR and 5 on placebo discontinued therapy due to elevated liver enzyme levels. Patients were started on 20 mg of ZOCOR, and one third had their dose raised to 40 mg.

Your doctor should perform routine blood tests to check these enzymes before you start treatment with ZOCOR and periodically thereafter (for example, semiannually) for your first year of treatment or until 1 year after your last elevation in dose. Patients titrated to the 80-mg dose should receive an additional test at 3 months. If your enzyme levels increase, your doctor should order more frequent tests. If your liver enzyme levels remain unusually high, your doctor should discontinue your medication.

Tell your doctor about any liver disease you may have had in the past and about how much alcohol you consume. ZOCOR should be used with caution in patients who consume large amounts of alcohol.

PRECAUTIONS

Before starting treatment with ZOCOR, try to lower your cholesterol by other methods such as diet, exercise, and weight loss. Ask your doctor about how best to do this. Any other medical problems that can cause high cholesterol should also be treated.

Drug Interactions: Because of possible serious drug interactions, it is important to tell your doctor what other drugs you are taking, including those obtained without a prescription.

ZOCOR® (simvastatin) can interact with cyclosporine (Sandimmune), itraconazole, ketoconazole, Lopid, niacin, erythromycin, clarithromycin, HIV protease inhibitors, and nefazodone.

To avoid possible serious side effects, avoid drinking large quantities of grapefruit juice (more than one quart daily) while on ZOCOR. (See WARNINGS, Muscle.)

Some patients taking lipid-lowering agents similar to ZOCOR and coumarin anticoagulants (a type of blood thinner) have experienced bleeding and/or increased blood clotting time. Patients taking these medicines should have their blood tested before starting therapy with ZOCOR and should continue to be monitored.

Central Nervous System Toxicity; Cancer, Mutations, Impairment of Fertility: Like most prescription drugs, ZOCOR was required to be tested on animals before it was marketed for human use. Often these tests were designed to achieve higher drug concentrations than humans achieve at recommended dosing. In some tests, the animals had damage to the nerves in the central nervous system. In studies of mice with high doses of ZOCOR, the likelihood of certain types of cancerous tumors increased. No evidence of mutations of or damage to genetic material has been seen. In one study with ZOCOR, there was decreased fertility in male rats.

Pregnancy: Pregnant women should not take ZOCOR because it may harm the fetus.

Safety in pregnancy has not been established. In studies with lipid-lowering agents similar to ZOCOR, there have been rare reports of birth defects of the skeleton and digestive system. Therefore, women of childbearing age should not take ZOCOR unless it is highly unlikely they will become pregnant. If a woman does become pregnant while taking ZOCOR, she should stop taking the drug and talk to her doctor at once. The active ingredient of ZOCOR did not cause birth defects in rats at 3 times the human dose or in rabbits at 3 times the human dose.

Nursing Mothers: Drugs taken by nursing mothers may be present in their breast milk. Because of the potential for serious adverse reactions in nursing infants, a woman taking ZOCOR should not breast-feed. (See WHEN ZOCOR SHOULD NOT BE USED.)

Pediatric Use: ZOCOR is not recommended for children or patients under 20 years of age.

SIDE EFFECTS

Most patients tolerate treatment with ZOCOR well; however, like all prescription drugs, ZOCOR can cause side effects, and some of them can be serious. Side effects that do occur are usually mild and short-lived. Only your doctor can weigh the risks versus the benefits of any prescription drug. In clinical studies with ZOCOR, less than 1.5% of patients dropped out of the studies because of side effects. In a large, long-term study, patients taking ZOCOR experienced similar side effects to those patients taking placebo (sugar pills). Some of the side effects that have been reported with ZOCOR or related drugs are listed below. This list is not complete. Be sure to ask your doctor about side effects before taking ZOCOR and to discuss any side effects that occur.

Digestive System: Constipation, diarrhea, upset stomach, gas, heartburn, stomach pain/cramps, anorexia, loss of appetite, nausea, inflammation of the pancreas, hepatitis, jaundice, fatty changes in the liver, and, rarely, severe liver damage and failure, cirrhosis, and liver cancer.

Muscle, Skeletal: Muscle cramps, aches, pain, and weakness; joint pain; muscle breakdown.

Nervous System: Dizziness, headache, insomnia, tingling, memory loss, damage to nerves causing weakness and/or loss of sensation and/or abnormal sensations, anxiety, depression, tremor, loss of balance, psychic disturbances.

Skin: Rash, itching, hair loss, dryness, nodules, discoloration.

Eye/Senses: Blurred vision, altered taste sensation, progression of cataracts, eye muscle weakness.

Hypersensitivity (Allergic) Reactions: On rare occasions, a wide variety of symptoms have been reported to occur either alone or together in groups (referred to as a syndrome) that appeared to be based on allergic-type reactions, which may rarely be fatal. These have included one or more of the following: a severe generalized reaction that may include shortness of breath, wheezing, digestive symptoms, and low blood pressure and even shock; an allergic reaction with swelling of the face, lips, tongue and/or throat with difficulty swallowing or breathing; symptoms mimicking lupus (a disorder in which a person's immune system may attack parts of his or her own body); severe muscle and blood vessel inflammation; bruises; various disorders of blood cells (that could result in anemia, infection, or blood clotting problems) or abnormal blood tests; inflamed or painful joints; hives; fatigue and weakness; sensitivity to sunlight; fever, chills; flushing; difficulty breathing; and severe skin disorders that vary from rash to a serious burn-like shedding of skin all over the body, including mucous membranes such as the lining of the mouth.

Other: Loss of sexual desire, breast enlargement, impotence.

Laboratory Tests: Liver function test abnormalities including elevated alkaline phosphatase and bilirubin; thyroid function abnormalities.

NOTE: This summary provides important information about ZOCOR. If you would like more information, ask your doctor or pharmacist to let you read the complete prescribing information and then discuss it with them.

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(438)C

KUDZU

IN DOUG STEWART'S "KUDZU: LOVE It—or Run," in the October 2000 issue, I was struck by the irony of a Super Wal-Mart coming to Oxford, Mississippi, and displacing a university's agricultural test plot: commercial kudzu replacing botanical kudzu.

Ed Clopton
Iowa City, Iowa

ONE OF KATHRYN KOLB'S PHOTOgraphs is accompanied by a caption that says, "Grazing sheep are a natural solution to kudzu control in a Tallahassee park." Now, I am a city gal, but here in Texas we would call the pictured animals goats.

Florence Box
Dallas, Texas

The biological mowing machines are hair sheep, which are non-wool-producing ovines. Hair sheep are recent immigrants to the United States from more tropical climates and are well suited to heat, humidity and rain. Most of the flock in our kudzu article and in the picture below are the St. Croix White, the Barbados Black Belly (brown with black bellies) and the South African Dorper (black heads and white bodies). Bellwether Solutions of New Hampshire has leased this flock to Tallahassee, Florida's park service for a five-year pilot project to kill the kudzu. Easy ways to differentiate sheep and goats are: sheep are generally larger than goats; sheep tails go down and goat tails go up; and sheep say *baaahhh* whereas goats say *enhenhenh*. Ed.

CONGRATULATIONS ON YOUR COMprehensive and charming description of the battle against kudzu. Doug Stewart captured the essence of an integrated kudzu management program: fight it every way you can.

I want to clarify that it was the Department of Agriculture's U.S. Forest Service that established a collaborative program with China. The Forest Service has, for the past two years, funded four Chinese scientists to search for insects that eat kudzu. David Orr of North Carolina State University is a highly valued collaborator in these studies.

Kerry O. Britton, Project Leader
Insects and Diseases of Southern Forests
Department of Agriculture's U.S. Forest Service
Athens, Georgia

KATHRYN KOLB

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Sponsor reserves the right, in its sole discretion, to void any and all entries of an entrant whom Sponsor believes has attempted to tamper with or impair the administration, security, fairness or proper play of this Sweepstakes. **Grand Prize:** $250,000, which winner may use towards the purchase of his/her "A Home for the Holidays", awarded as a one-time payment of $250,000 in the form of a check (value=$250,000). **Judging:** Grand Prize winner will be selected in a random drawing from among all eligible entries received on/about 1/16/01 by Project Support Team, Inc., an independent judging organization whose decisions will be final and binding in all matters relating to this Sweepstakes. Winner will be notified by telephone and/or mail on or about 1/18/01. 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YOUR ARTICLE ON KUDZU WAS QUITE startling. I have never met the suffocating vine in person but knew of its use in food, medicine and cloth in Japan. A good resource that has many recipes is *The Book of Kudzu: A Culinary & Healing Guide,* written by William Shurtleff with photographs by Akiko Aoyagi.

Jean A. Humphreys
Medford, Oregon

THE BOZEMAN TRAIL

THE MAP THAT ACCOMPANIES THE article "The Bozeman Trail" by Donald McCaig shows Bozeman, Montana, too far east. It is up over the mountains to the west.

Mark Wyman
Normal, Illinois

CRAZY HORSE WAS OGLALA, NOT Hunkpapa Lakota, as you wrote.

Steven M. Kane
Providence, Rhode Island

JAMES TWITCHELL

IN RICHARD AND JOYCE WOLKOMIR'S article "You Are What You Buy," advertising analyst James Twitchell asks why his "daughters are willing to buy a bottle of water worth two cents and pay $1.50." Hasn't he ever noticed that the name of one of the best-selling bottled waters, Evian, is the word "naive" when spelled backward?

Alec W. Gray
Bellair Bluffs, Florida

YOUR ARTICLE IMPLIES THAT PHILAdelphia merchandiser John Wanamaker founded Mother's Day. Anna Jarvis of Grafton, West Virginia, to whom you alluded as "the local woman mourning her mother," was the driving force behind making the day a national holiday.

Todd Hamrick
Morgantown, West Virginia

Following the death of her mother, Anna Jarvis doggedly campaigned the clergy, politicians and business leaders—including John Wanamaker—to recognize Mother's Day as a national holiday. The first observance, on May 10, 1908, was a local affair celebrated both in Grafton, West Virginia, at Andrews Methodist Episcopal Church and at Wanamaker's Philadelphia store, where he presided over the Mother's Day service in the store's 5,000-seat auditorium. The official flower was the carnation, the favorite of Jarvis' mother. By 1914 Jarvis (below) had garnered a proclamation from President Woodrow Wilson, officially making the second Sunday in May Mother's Day—and making florists and merchants such as Wanamaker gleeful. Soon

after, Jarvis waged a new, yet hopeless battle, this time against the commercialism that had overpowered the sacred day. Ed.

PHENOMENA, COMMENT & NOTES

JULIE WAKEFIELD'S COLUMN ON THE ELIava Institute and the applied uses of bacteriophages was fascinating and very timely, since the crystal (three-dimensional) structure of the bacteriophage named HK97 was recently reported in *Science* magazine by a group of scientists that included my colleagues, Roger Hendrix and Robert Duda. Roger is also cofounder of the Pittsburgh Bacteriophage Institute.

For the past 20 years Roger's group has been studying how phages assemble into their elegant shapes and remarkably functional forms from individual protein components. What is unusual about this crystal structure is the novel way in which HK97 links the protein subunits of its shell (cap-

MIKE DUBOSE/UNITED METHODIST NEWS SERVICE

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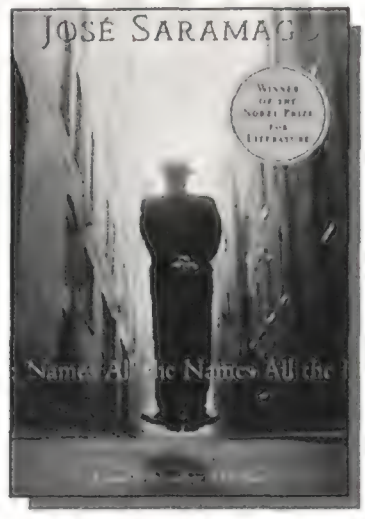

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sid) into interlocking rings (catenanes), protecting the phage in much the same way that chain mail protected medieval knights from spears and swords. HK97's crystal structure validates Bob Duda's original concept of its chain-mail linkage, which he deduced entirely from biochemical evidence.

John Hempel
University of Pittsburgh
Pittsburgh, Pennsylvania

THE OBJECT AT HAND

MARIKA CARLEY'S COLUMN ABOUT Elizabeth "Libba" Cotten was wonderful; however, the reference to the meaning of Libba's song "Freight Train" differs from what I heard her tell a PBS film crew. She explained that she and her friends took short rides on the freight trains that came through her town. They knew most of the train men, who let them ride in the cab. Cotten's mother did not approve of these rides because the train men had such bad reputations. "Freight Train" simply and wonderfully expresses the joy of a young girl, forever captured in a hauntingly beautiful song.

Walter S. Schaefer, Jr.
Altoona, Alabama

JAGUARS

WE ENJOYED CHARLES BERGMAN'S ARticle "The Cat That Walks by Itself." In the early 1970s, we traveled in our own Greyhound bus, which we had converted into an RV, and resided in our son-in-law's coconut grove, or cocal, in northern British Honduras (now Belize). The cocal fronted on Four Mile Lagoon, which emptied into the *Rio Hondo*, the natural border with Mexico. Thick bush hemmed in the cocal on all other sides.

At sunrise one morning, we awoke to find a huge, impressive male jaguar sitting erect about 40 yards from our bus, staring at us. The noises of our teenagers getting out of bed and rushing to the windows while exclaiming excitedly didn't seem to make him the least bit nervous. He reminded us of a

large spotted cat indulging his feline curiosity. His body language seemed to say, "OK, when does the show start?" We performed for him, making breakfast, getting dressed and so on. After about 20 minutes, he moved languidly through the open spaces between coconut trunks, quietly disappearing into the bush.

Over the next several months he visited us at odd intervals, and we became more used to each other. We could clearly see him follow us with his eyes as we moved back and forth in the bus or appeared in the doorway. Of course, we made no sudden moves or startling noises.

About a mile up the river was the border crossing from Santa Elena, Mexico—a small enclave carved out of our son-in-law's ranch, containing a store, the customs and immigration shed and the police barracks. Crossing the river was a fairly new steel bridge. One day at sunup, our massive feline friend showed up among the buildings. He sat erect, staring about, waiting for a new show to begin. The panicked citizens crowded into the little store. The police scrambled from the shed to the barracks, but none of them armed himself from the locked armory, for no clear reason given later. The big jaguar sat patiently.

Time passed slowly.

A big truck rattled across the bridge, and when the driver spotted *El Tigre Grande*, he parked his truck at the bridge's end. The jaguar eyed him. The driver then stood on his running board and yelled at the cat, which didn't disturb the jaguar even slightly. More cars and trucks drove up and parked. Eventually the jaguar leisurely strolled into the nearest bush, toward the direction of our cocal.

He visited us a few times after that, and I fervently hope he went peacefully elsewhere, finding new entertainment and living a long and happy life.

Robert S. Jamieson
Longwood, Florida

WRITE TO SMITHSONIAN

Letters for consideration in this column must include your daytime telephone number, full name and postal address. Transmit mail to LettersEd@simag.si.edu or send it to Smithsonian Letters Editor, P.O. Box 44400, Washington, D.C. 20026-4400. Letters may be edited for clarity and length.

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The Cypress Grill

AT A SEASONAL HERRING SHACK IN NORTH CAROLINA, THE HOUSE SPECIALTY EVOKES MEMORIES OF AN EARLIER ERA

BY T. EDWARD NICKENS

"Sunny-side up" or "cremated," herring at the cook-up shack is served piping hot.

THE ROAD TO THE CYPRESS GRILL, in the two-stoplight town of Jamesville, North Carolina, scurries down a sandy slope shaded by tall oaks and poplars, their branches draped with Spanish moss. You'll know quickly if you've gone too far. The asphalt dead-ends at a boat ramp, which leads to the coffee-with-cream-colored Roanoke River. Here the river flows swiftly through one of the South's largest intact bottomland forests, its banks a greening veil of cypress and tupelo gum trees.

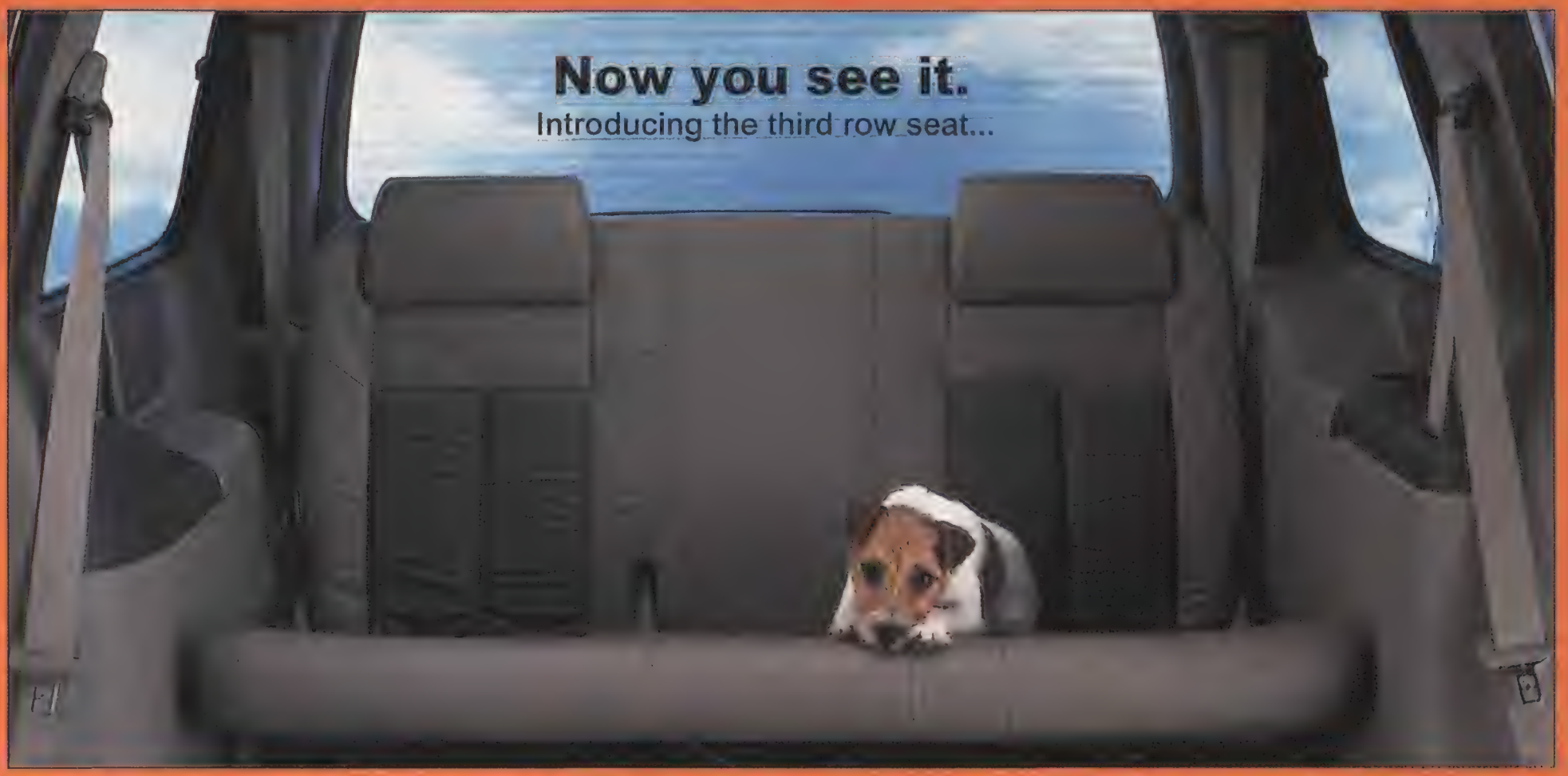
At the intersection of the road and the river is a little shack of a place built of weathered board-and-batten cypress siding, with a tin roof and hinged shutters propped open to reveal a black placard with orange lettering: "YES we're OPEN." Seeing the sign, I breathe a sigh of relief. I'm not too late.

Whether I'm fishing for shad, paddling a back swamp or bird-nerding the Roanoke's lowlands during the spring warbler migrations, I make a stop at the Cypress Grill every chance I get. For almost 65 years now the ramshackle diner has opened its doors for a few short months, January through April, to dish up an ephemeral pleasure: river herring, netted on their spawning runs from the open Atlantic. Historically, untold legions of the fish surged up the Roanoke, Chowan, Tar-Pamlico and other eastern North Carolina rivers each spring, supporting a seasonal fishery that shipped salt-cured herring across the South and Northeast by the millions of pounds. Locals, too, flocked to the riverbanks to nail together makeshift "cook-up shacks" where the fish were fried over an open fire or a propane burner from an old tobacco-curing barn.

The foot-long river herring were an integral part of daily life. Farmers even used herring parts as fertilizer. ("When you plant yo' corn, put a herrin' to de hill / If dat don't do it, de good Lawd will," ran one line in an old fisherman's chantey.) By 1880 the Roanoke region's fishery landed tens of millions each spring, and not too many years ago you could take a washtub down to most any eastern North Carolina fish house and fill it with herring for a dollar. No longer. Pollution, overfishing and loss of spawning grounds—due to the construction of dams in the past half-century—have reduced numbers to all-time lows. These days, if you want an old-fashioned taste of herring, you head down the hill at Jamesville and hope your timing is right.

Like mine. "Oh yessir, we have herring today, sure do," Leslie Gardner tells me. He stands between shelves groaning with tea pitchers and homemade pies. The interior of the Cypress Grill is crowded, homey; the air is spiced with the scent of vinegar

ALL: PAUL DAGYS



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Leslie and Sally Gardner have run the shack on the Roanoke River for 27 years.

and fried fish. There are a half-dozen booths painted stark white and eight tables with straight-back chairs. A hand-lettered poster hawks tickets for the Jamesville EMS and Rescue Raffle. Sunlight bores in through a few knotholes in the siding.

Leslie is lean and gray-haired, with salt-and-pepper eyebrows and faded jeans held up by a belt with a 1972 Eisenhower silver dollar buckle. He and his wife, Sally, have rented and run the Cypress Grill for 27 years, bolting the doors each season in time to put in a new tobacco crop. (They decided to retire from tobacco farming a few years ago.) Originally constructed about 1936, the building burned down in 1946 and was soon rebuilt. It may just be the only seasonal herring shack left in this part of North Carolina.

When the Gardners first took over, herring were an easy score. Each morning at first light, the Gardner boys launched their skiffs on the river to net fish before they went to school. These days, Leslie loads up his pickup truck at fish houses on the nearby Chowan River and Albemarle Sound, making the run every single day the restaurant is open. "You know how it is," he tells me. "If I ever skipped a day, then I'd want to skip two, or three. I told myself way back that I wouldn't start that. There ain't no need to have old fish."

"They want it burnt slap up to cracklins. It don't matter to me. . . . I don't eat the things, anyway."

Especially when you need so many. On a typical day, up to 500 herring will take a hot dip at the Cypress Grill, most under the watchful eye of a short and chipper lady named Julia Price. "Other than raisin' young-uns," she says at a near-holler over the boisterous sizzle of frying fish, "I've been right here, off and on, for more than 20 years." It takes a certain alchemy to turn an overgrown, bony sardine into a regional icon, and Julia is happy to play sorceress. First, she explains, notches are slashed into the fish, perpendicular to the backbone. The cuts let the hot oil bubble deep into the flesh, softening the herring's bones. Some folks request fish barely fried—this is called "sunny-side up"—so that the skin can be scraped away to reveal the flesh beneath. But far more ask for their order "cremated," cooked so long that the fish turns a deep chestnut brown, and hardens up so you can eat one like a cob of corn, bones and all. "They want it burnt slap up to cracklins," Julia says, with a can-you-believe-it look on her face. "It don't matter to me, though. I don't eat the things, anyway."

Just then, waitress Linda Perry sticks her head through the order window. She's laughing hard and holding an order ticket. "Fellow out here says he wants his herring 'a total loss,'" she says. "Wants 'em brickbat hard." Julia grins, and scoops three freshly fried fish back into the pans. "Brickbat hard, huh? Well, we'll see about that!"

To be sure, river herring are an acquired taste. And for many Cypress Grill regulars, it's a taste acquired during a time now past, and every bite of fish evokes an era when these silvery harbingers of spring were counted on to keep a belly full. This has always been a poor region. For the first half of the 20th century, tenant farming and sharecropping made cash money hard to come by. As late as 1943, less than 35 percent of the region's farms had electricity, and without refrigeration, fresh meat was only an occasional pleasure. It wasn't unusual for salt-cured herring to find its way to the plate three times a day. "Fish and collards," grimaces Sally. "That's what people lived on."

"Tiny" Harrison remembers. She's sitting in a window booth with two friends who drove her here from a nearby rest home. Born near Jamesville in 1909, she dresses in Sunday go-to-meeting clothes for her annual

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pilgrimage to the Cypress Grill. "We stored our fish out in the smokehouse, with tins of lard and sausages hanging off the rafters," she recalls. "To me, it's a real taste of home."

I take a booth across from Tiny, with a view of the river. My plate comes heaped with herring and tubular sacks of herring roe, rolled in cornmeal and fried. When I pick up knife and fork, Tiny gives me a quizzical look. "No, no," she reminds me, "with your fingers."

Of course. How silly of me. I pick up a fish, forked tail between thumb and forefinger. Sheathed in cornmeal, the herring is steaming hot, and I have to hold the first few bites between my teeth for a few seconds. No one ever mistook river herring for chicken. Fresh from the pan, each bite has a smoky punch, an unrepentant flavor of fish. I savor each mouthful. I may not know what it feels like to watch net corks bob and dance in the river current, or to fill a crock with fish and salt. But for the moment, I can taste the brine of the sea, the salt of toil, the urgency of rivers pregnant with spring rains, in the satisfying crunch of a not-quite-cremated herring.

When Leslie stops by my table, I ask him about the most herring he's seen one customer eat. There's one lady, he says, that eats 10 or 12 at a time—"and she's no big girl, either." For years Mort Hurst, a local county commissioner and noted big eater, asked Leslie if he might eat all he could for a fixed cost. "But he's the collard-eatin' king of the world," Leslie tells me. "Set a world record for eating Moon Pies. We won't let him do it. He'd just stick us."

People love their herring, I say, and Leslie just grins. "Shore do." Like this one fella, he recalls, who came in for supper just before he was scheduled for heart surgery. "He wanted a good fill of herrings before he went into the hospital," Leslie explains, "and it just so happened that we ran short. He made a horrible ruckus, hollering and yelling. I felt right sorry for him, I did. He told me, 'Mister, if I wasn't in the condition I'm in, I would fight you.' I could see why he needed a heart operation."

Leslie fills my cup with iced tea, and when I ask him how things have changed over the past 50 years, he has to think for a moment. Instead of hog

"We stored our fish out in the smokehouse, with tins of lard and sausages hanging off the rafters."

lard, the fish are fried in heart-healthier vegetable oil, he tells me. The previous proprietor poured a concrete floor over the old sawdust one, and Leslie himself installed an automatic fish scaler about 20 years ago. "But we've tried not to get real modern."

Before I head out the door, I amble over to a table where Sally introduces me to Mack and Dona Smith—"Some real herring eaters," she says. The Smiths are polishing off a half-dozen fish, and pondering pie. For the past ten years they've made the 45-minute drive from their home to the Cypress Grill every Friday night the place is open. "*Every* Friday night," Mack says, proudly, holding a half-eaten herring with two hands. He's a trim fellow in a crisp shirt, and he can, in fact, recall the only two Fridays he and Dona missed their appointed hour. In March of 1994, Dona had neck surgery and couldn't make the trip. "But we didn't go without, we still ate herring," he says with a resolute nod. "It just so happened that the local fire department had a few."

As long as herring are still around, he tells me, "we'll eat our share," and in his voice I sense the fear of a fishless Friday. "Sometimes we almost get to the point where we want to come in the middle of the week, but we don't. Looking forward to it just makes these fish better."

That, I figure, and looking back.

Pilgrims come from miles around to celebrate what one calls "a real taste of home."

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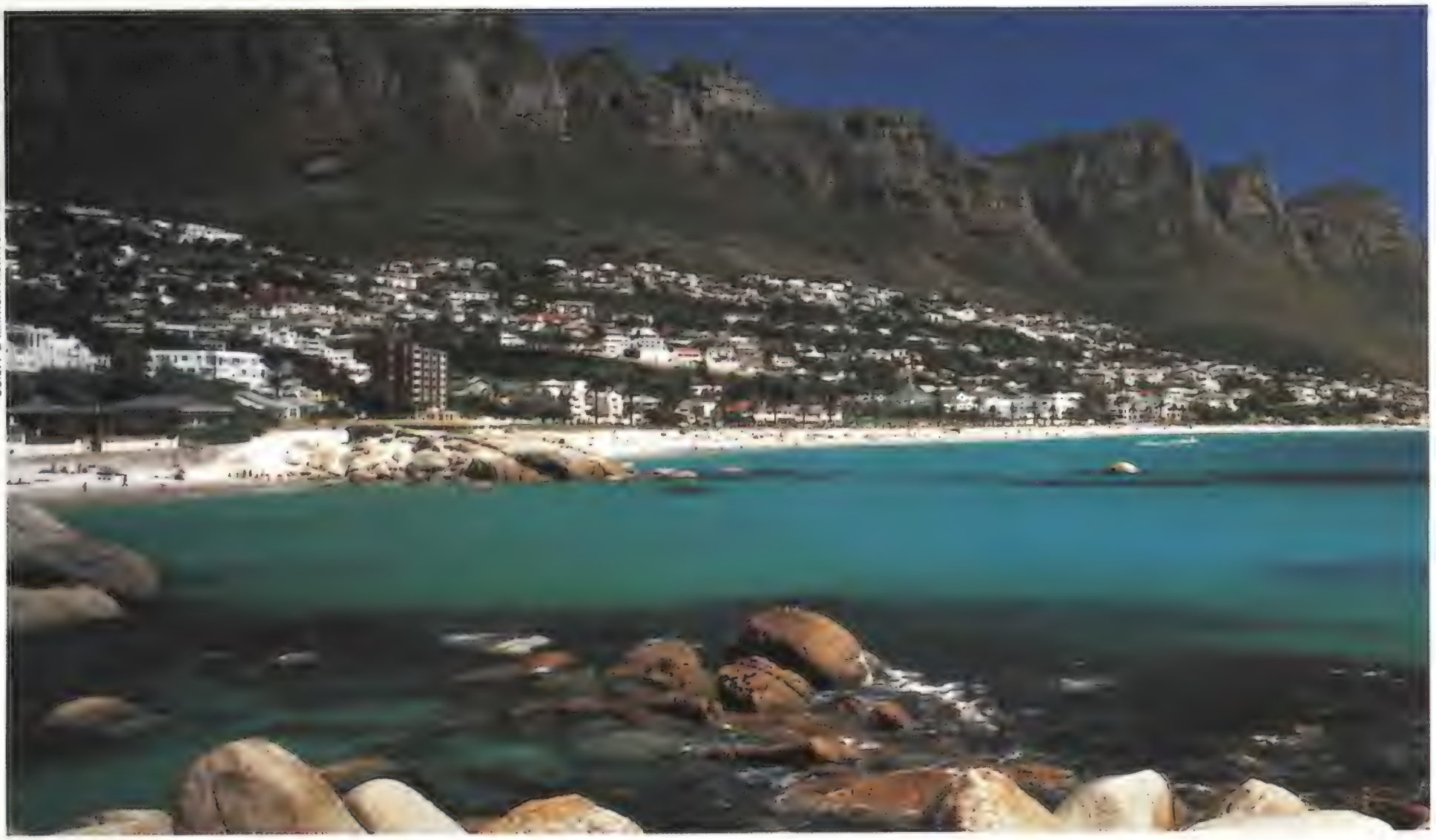

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Portraits of Her People

HISTORIAN, PHOTOGRAPHER AND MACARTHUR "GENIUS," DEBORAH WILLIS DOCUMENTS THE BLACK EXPERIENCE

BY MICHAEL KERNAN

Among Deborah Willis' favorite photographs is the A. P. Bedou image on her book and in the background.

PICTURES WERE ALWAYS PART OF her life. Her earliest memories are of standing beside her cousin in his darkroom and watching the images magically appear on the paper in the developing tray.

"My father—a policeman for 25 years—also had a passion for photography," said Deborah Willis, a Smithsonian art historian and photographer who was recently awarded a MacArthur "genius" fellowship. "He was an amateur, but a serious one. He took pictures of our family and of women in my mother's hair salon."

Her childhood home in North Philadelphia was always full of churchwomen who'd come to get their hair done, and to sit and chat, and her father often had his Rolleiflex camera at the ready.

"So, I grew up with this aspect of images and style. I learned a sense of framing and the beauty in pictures."

One day Willis got hold of a book called *The Sweet Flypaper of Life* that intrigued and inspired her. It was a narrative by Langston Hughes with black-and-white photographs by Roy DeCarava. It came out in 1955. My family had a copy in our house, and we all read it to tatters over the years. Hughes assembled DeCarava's pictures of life in Harlem and built a story around them, a story that quivered with immediacy, a story of families

KAY CHERNUSH

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Joe Harris, a New York photographer who specializes in urban scenes, captured the hearty exuberance of a conversation between friends Speedo and Smiley on a Harlem street.

struggling to stay together, of youths gradually losing their energy and purpose on the hard streets of New York, of fights and parties, grief, and above all, the ineffably sweet moments that make human existence bearable.

Then, in 1969, Willis saw the "Harlem on My Mind" photography show at the Metropolitan Museum of Art in New York City, the first that depicted African-American family life and political and social history. Soon after, she began studying photography at the Philadelphia College of Art.

"I noticed that the history books we used had no pictures by black photographers," she said. "I decided to try to find them when I started working at the Schomburg [Center for Research in Black Culture at the New York Public Library] after I finished graduate school at Pratt in 1979."

The Schomburg was a revelation. It had a huge collection of pictures by black photographers, documenting many aspects of the world of African-Americans that were generally unknown to white Americans. But the work was cataloged by subject, not by photographer. Willis set herself to refiling and recategorizing the entire collection. "I wanted to give the photographers an identity," she said.

"There were a number of wonderful early daguerreotypes and tintypes by African-American photographers: James Presley Ball, who worked in Montana before the turn of the 20th century, and Augustus Washington, a man born in 1820 who took many pictures in New England—including one of a young John Brown without the beard—before he emigrated to Liberia. I found people all over the country, black photographers, making mostly portraits of black people but also some of white abolitionists."

Incidentally, Willis first wrote about Augustus Washington in 1982. It was not until almost 20 years later that Washington was celebrated in an exhibition at the Smithsonian's National Portrait Gallery (SMITHSONIAN, May 1999).

In 1992 Willis moved to Washington, D.C. to help develop an African-American museum for the Smithsonian. She explored the possibility of putting such a museum on the Mall. But after months of searching out donors and rounding up collections, the project was turned down by Congress.

"We have the Anacostia Museum, but that's community-based. This was to be a national museum." As a curator for the Smithsonian's Center for African-American History and Culture and the Anacostia, Willis continues to develop exhibitions that help keep an African-American presence on the Mall.

Last winter the career of Deborah Willis came to a climax with the opening of an important show that she curated, "Reflections in Black: A History of Black Photographers, 1840 to the Present," featuring some 300 pictures by 120 photographers. The opening on February 3 was to be perhaps the proudest night of her life. It turned out to be the saddest.

"The day before the opening," she told me, "my nephew was killed. He was on his way here to see the show, but he stopped off in Philadelphia to see his mother."

With some school friends, the 27-year-old Songha Thomas Willis dropped by a nightclub. He was held up in the parking lot, robbed and shot to death.

"This was a nonviolent kid. He loved the world. He went to private schools; he was a kid who was protected, and he didn't know what was

JOE HARRIS

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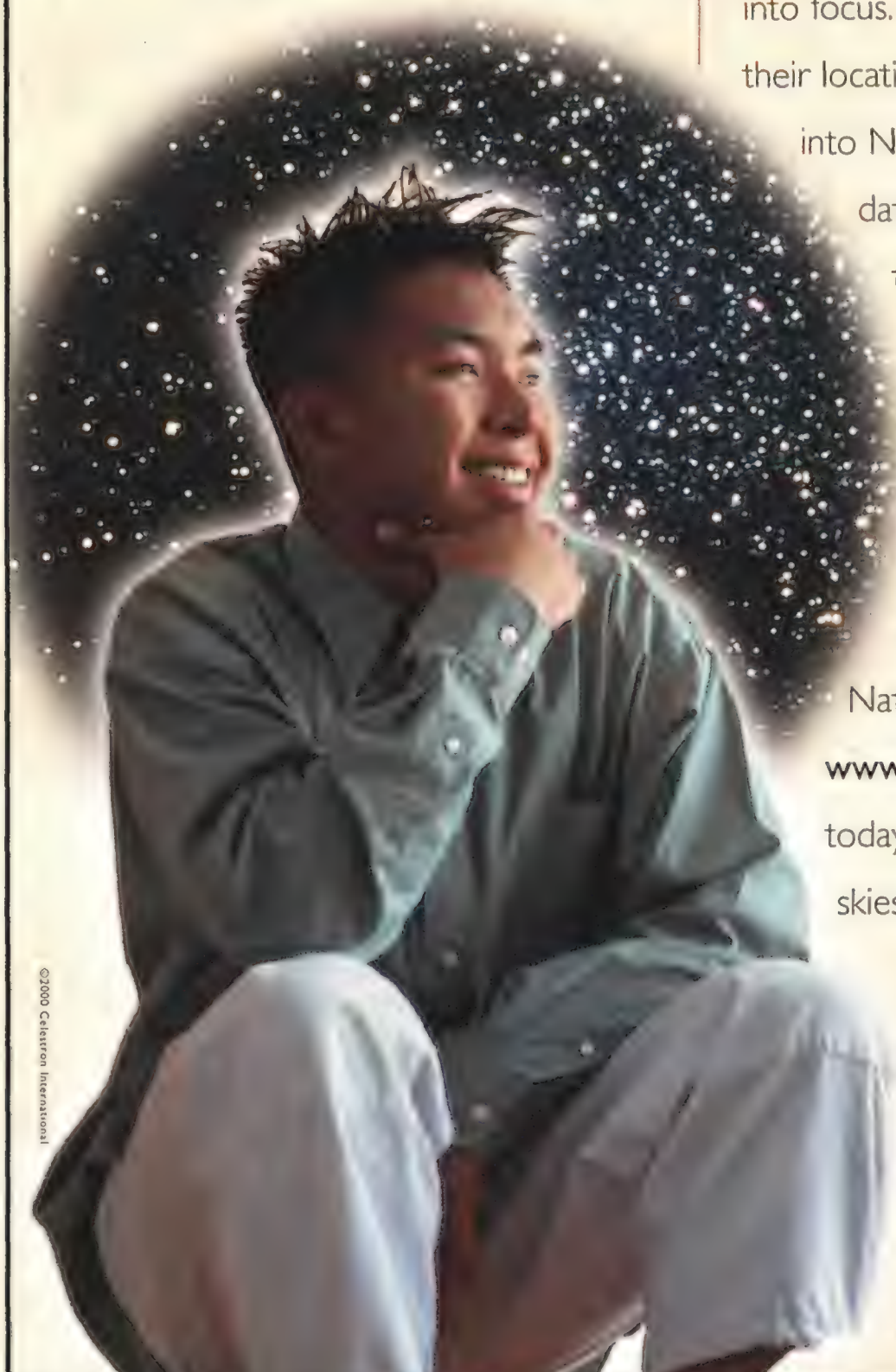

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In his series called *Bobtown*, Roland Charles focused on the telling moments of everyday life among African-Americans in a rural community in Louisiana.

happening. He did everything the guy wanted, gave him his money.

"I want to use some of the MacArthur money to do a project about gun violence. You know, my father never used his gun all the 25 years he was a cop."

She's concerned about her son, Hank Sloane Thomas. "He's been at New York University and now he wants to drive across the country to California, and I want to protect him, the only male child left in my family. But I have to let him go. He says, 'Mom, I'll call you from every city.' . . . You have to let them go."

Though freed from money worries with the MacArthur grant of $100,000 a year for five years, Willis, 52, is busier than ever. In addition to her Smithsonian duties, she travels weekly to North Carolina to teach a course in visual images in popular culture at Duke University.

Of her own photography work, she says, "I use color for family snaps, but all my work is in black and white. Color doesn't have the soul, you don't put yourself into it. I find black-and-white fascinating because it has that sense of intimacy. You look at the gray tones, you read the images for yourself."

Willis plans to document in photographs the unsung work that women do in cities around the country. For instance, a current project involves taking photographs of women in hair salons.

One of her favorite pictures is the big crowd shot on the cover of the "Reflections in Black" catalog. Taken in 1910 by A. P. Bedou, a New Orleans photographer, it shows a group of people listening to a speech by Booker T. Washington.

"I found this in 1974 when I was starting my research, this celebration of an event in life. Men looking up at the camera, they all wear hats, everyone wore hats then, and a few women with those big wide-brimmed hats. It's very hard to make a strong picture out of a crowd. But this one stays with you."

She is right. The exhibition and its 348-page catalog have a lot of pictures that stay with me. "Reflections in Black" travels to Albany, New York, in January, and will tour the country for the next two years.

The photographs span from slavery to the civil rights era to the present day. The early images depict a world that I knew little of, for it was largely invisible to white America: daguerreotypes of black men and women, some of them in their coffins; wedding portraits by James VanDerZee, now famous; a typewriting club; a string band with zither and banjo; a Tuskegee commencement; distinguished black leaders like Frederick Douglass and W. E. B. DuBois.

Moving into the 1960s, we see the marches, the rallies, the dramatic high points of the civil rights movement, and candid shots of Malcolm X (one with Muhammad Ali), H. Rap Brown, James Baldwin, the great saxophonist John Coltrane and a striking portrait of a white-robed Muslim woman in Brooklyn.

Many pictures are not about politics or art. They are simply a record of black life through the years. Roland Charles provides a charming photograph of a woman having her hair done, taken in a mirror. The woman is ducking away in shy laughter as the beautician looks on amused. Or *Sholumbo Playing Cards with his Grandpa*, in which a small boy and an old man engage in a serious contest on a makeshift table.

A world is captured here, and as Willis says, with black-and-white you have to go in and become part of it.

Don't ask me to pick a favorite picture (as I asked Willis to), but as I turn the page I see a candid shot called *Speedo and Smiley in Harlem*, 1969, by Joe Harris. The two men are meeting on an empty sidewalk among some cookie-cutter apartment buildings. The urban neighborhood is stark, almost grim, but the friends are laughing as they shake hands, glad to see each other, and you have to smile, too, for the sheer joy in their faces.

ROLAND CHARLES

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THE OBJECT AT HAND

Race for a Remedy

RETIRED FROM THE TRACK, THOROUGHBRED FIRST FLIGHT SERVED AS A "FACTORY" TO PRODUCE BOTULISM ANTITOXIN

BY CAROLYN H. CROWLEY

Tessler Baird, shown here at 2½, plays near a photograph of First Flight, the horse used to produce the antitoxin that cured the little girl of botulism.

AMONG THE MORE THAN 100,000 ITEMS IN THE Smithsonian's medical collections are a horse's halter and a vial of botulinum antitoxin derived from horse's blood. Botulinum toxin is the most powerful and deadly of all natural poisons—gram for gram more lethal than nerve agents.

The halter and vial of antitoxin came from First Flight, a 1,200-pound thoroughbred that holds a record of service to this country few humans or animals can rival.

After being injected by U.S. Army researchers with inactivated toxins to stimulate his immune system, First Flight became, in 1990, the world's only known source of antitoxin against all known types of the neurotoxin that causes botulism—a paralyzing, and potentially fatal, disease. For at least one young family, the existence of that antitoxin turned a terrifying ordeal into a story with a happy ending.

On December 29, 1997, Tracy Baird gave birth by cesarean section to a third daughter, Tessler. Three days later, Tracy and her husband, William, took their baby home.

Within 14 hours, Tessler had trouble breathing. "Panic was on her face," Tracy says. "I thought she was choking." The Bairds rushed Tessler to a nearby hospital.

"She was throwing herself up in the air, jerking her shoulders up to expand her lungs. I thought she was having a seizure," Tracy says. "But she was having trouble getting oxygen." Doctors placed her on a mechanical ventilator, and transferred her to Children's Hospital in Columbus, Ohio.

One hour later, her fingers barely stirred. "Her pupils weren't moving. She was paralyzed," Tracy remembers.

Initially, the doctors ruled out infant botulism as a diagnosis, because they knew of no cases in children less than a week old. The neurologist remarked that the child had the appearance of being brain dead, and warned the Bairds that if a brain scan confirmed that, they might want to consider taking her off the ventilator. But the test showed that Tessler was normal.

The doctors began to suspect infant botulism, and sent the Bairds to get a stool sample from Tessler's last diaper. The anxious parents and the doctors waited as the Ohio Department of Health examined the sample for toxins. Finally, after a few days had passed, word came back that Tessler, indeed, had infant botulism.

Infant botulism—unlike its adult counterparts—occurs when a baby ingests botulinum spores, as ubiquitous as

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Three years later, "she's absolutely perfect," Tessler's mother smiles. "A normal, ornery child."

the dust on which they may travel. Because of competing bacteria that mature humans usually have in their intestines, these bacterial spores are killed or pass through the system before they're able to produce toxin in adults. When adults get botulism, it is from a toxin created by bacteria outside the body, found in food, for instance, that is not cooked well enough to kill the bacteria, and then sealed, allowing these anaerobic microbes to create neurotoxin.

But infants can become ill by ingesting the spores themselves, which create toxin in the oxygen-free environment of the child's intestines. Botulinum bacterial spores travel widely, and can be found in a variety of sources, including foods such as honey.

Infant botulism is rare, but the mortality rate is high if severe cases are not diagnosed and treated quickly. It strikes as many as 100 babies a year in the United States, most younger than 6 months.

There have been more than 1,700 confirmed cases in nearly 50 states since its recognition as a distinct disease in 1976. Parents may notice infrequent bowel movements, listlessness, lethargy, poor feeding, and drooling from the mouth because of an inability to swallow, as babies, essentially, become "floppy." The progression of weakness eventually necessitates hospital admission. The toxin can cause paralysis and loss of muscle tone in the respiratory tract, resulting in asphyxiation and possibly death.

Before Tessler was definitively diagnosed, her doctors had contacted infant botulism experts at the California Department of Health Services who were developing a new human-derived botulinum antitoxin for infants. There are seven known types of botulinum toxin, types A through G, each of which must be treated with antitoxin derived from different antibodies. The California researchers' antitoxin was for types A and B, which accounted for all but three of more than 1,500 infant botulism cases reported to that point. But the toxin found in Tessler's sample, it turned out, was type F, a rare form. There was no suitable antitoxin available. None, that is, except for the antitoxin derived from First Flight's blood.

The Army had stored First Flight's antitoxin, the only one for all seven botulinum toxin types. But, up to then, only 59 adults—no children—had received the equine-derived botulinum antitoxin. So the Bairds now faced a dilemma: try the antitoxin on their daughter or wait the many months it would take, while she was on the ventilator, for the poison to work its way out of her body.

"A doctor suggested injecting me," Tracy Baird recalls. "He said if Mom has a reaction—she may stop breathing—the baby likely will too. Other doctors said the shot wouldn't help Tess because, at that point, she'd been sick for more than a week." The Bairds chose the antitoxin injections, with a fearful Tracy getting the first one, just enough to test for adverse reactions. Everyone waited an hour for reactions, but none came.

The Army's doses were for adults, and little Tess weighed only seven pounds. As Tracy was doing all right, doctors decided to administer almost one-half the adult dose intravenously to Tessler.

Within four hours there was some movement in her hands and toes. Twelve hours after the first dose, she received a second one and gradually began to improve. Within a week, Tessler Baird was breathing on her own again, and was fully mobile. She spent three weeks recovering in the hospital.

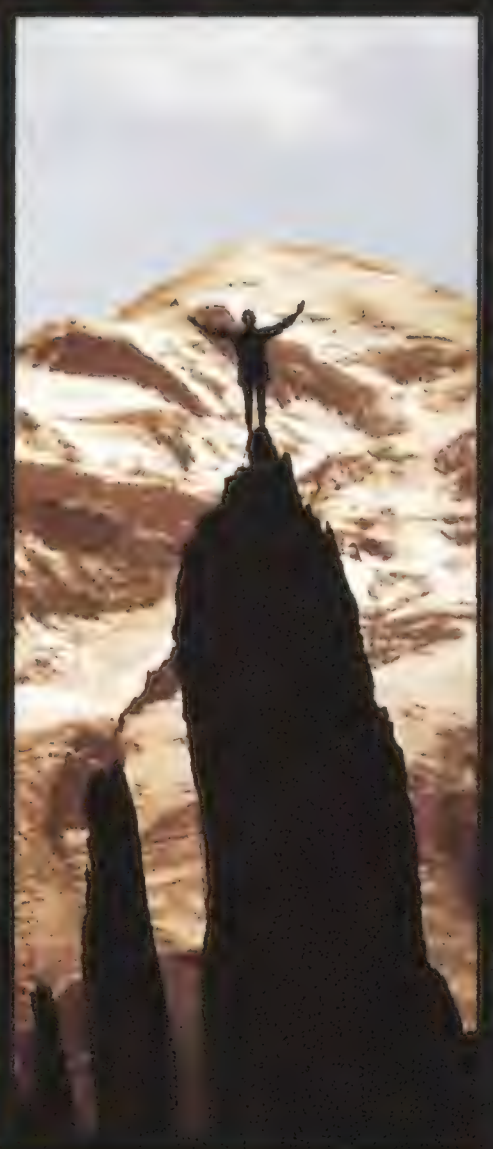
Three years later, the only signs of her disease are scars on her chest from feeding tubes. "She's absolutely perfect," Tracy says and smiles. "A normal, ornery child."

"It's unbelievable to me that the Department of Defense—with its bombs, airplanes and guns—also manages these medical research and treatment programs," Tracy says. "Thankfully, we

First Flight's halter and a vial of botulinum antitoxin derived from his blood reside today in the collections of the National Museum of American History.

RICHARD STRAUSS/SI

AHH YES



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were able to use its treatment. The military saved my daughter's life."

The horse that helped save Tessler began his medical career in 1978 when he was 10 years old. Already retired from racing, First Flight had served as a ceremonial caisson horse for funeral and military processions at Arlington National Cemetery. But, skittish in crowds, he is said to have bolted with a general's coffin during a somber funeral. Needless to say, he was retired again. Soon thereafter, he was selected for a then-new botulinum antitoxin program.

"If a horse ever knew his value to the medical world, it was First Flight. He was a fractious, hot-blooded, pumped-up, macho horse," says George Lewis, who worked with First Flight for many years. Now retired, Lewis was a colonel in the U.S. Army Veterinary Corps when he worked with First Flight at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) at Fort Detrick, Maryland. Its mission is to develop medical countermeasures—vaccines, drugs and diagnostics—to protect American military personnel from biological warfare agents and endemic infectious diseases.

Almost always the dominant horse in the pasture, First Flight was "proud and full of himself."

First Flight was not vicious or dangerous but had a mind of his own, says Lt. Col. Terry Besch, another veterinarian who worked with the horse for years.

"Woe to the technician who didn't have a way with horses," she says. First Flight would "lightly nip. A loud 'Hey!' and quick snap on the lead line by an experienced person" and First Flight cooperated again.

He then stood nicely to be groomed or have his blood withdrawn and "gratefully accepted a pat and a carrot, then he was off to the fields to boss around the other horses," Besch says. He was almost always the dominant horse in the pasture, "proud and full of himself as if he knew he had some importance."

Using delicate and dangerous techniques, a research team under Lewis' direction produced small quantities of each of the seven toxin types and slightly changed them so that they would not be toxic to First Flight. Instead they would cause him to respond by producing antibodies that would neutralize botulinum toxin. Lewis injected these new products, called toxoids, into First Flight. Then, once the horse had developed antibodies, the actual toxin—in carefully titrated amounts—would be injected to further boost antibody production. It was this procedure that frightened and worried Lewis: if he miscalculated, the injections could kill the horse.

Time after time, as he approached First Flight, syringe in hand, Lewis prayed, "God, I hope I got it all right.

"I was attached to the horse and the project, and to the importance of what we were doing," Lewis continues. "We'd double- and triple-checked everything, but still I had doubts, concerns and fears. I knew there were 10 to 100 times the amount of antibody in him than was needed to neutralize the toxin" that he was about to inject into First Flight. Still, he spent a number of uneasy nights sleeping in the barn with the big, dark bay gelding, checking him every few hours for signs of botulism poisoning.

First Flight wasn't always a compliant patient. Lewis remembers one crisp fall day in a big field at Fort Detrick. "With fire in his eyes, he almost killed me."

First Flight had had enough of the discomfort from people sticking needles into him. The horse tolerated injections and bleedings on a regular basis, without tranquilizers. But on this day, First Flight fought medical research. He swung around quickly as Lewis swabbed his hip for yet another injection and double-kicked his rear legs.

A hoof whisked by each of Lewis' ears. "I stepped back, let him—and me—calm down and then immunized him," Lewis remembers.

In 1980 First Flight was transferred to the University of Minnesota Medical School, which had developed the best technology in the country for processing equine immunoglobulin. Under contract to the Army, researchers there collected some 1,600 liters of blood from First Flight over the course of the next decade—storing the hyperimmune plasma and returning the red blood cells, in saline, to the horse's circulatory system. In 1990, as trouble escalated in the Persian Gulf, the Army asked the Minnesota researchers to use the stored plasma to produce large quantities of botulinum antitoxin. The serum from First Flight thus became the sole source of the "heptavalent" botulinum antitoxin shipped in 1991 to Saudi Arabia to treat soldiers and civilians, a precaution in case Iraqi President Saddam Hussein unleashed biological weapons during the Gulf War.

The United States suspected Iraq had a significant stockpile of biological weapons, which are almost impossible to detect during research and production. Biological warfare research facilities can be concealed in the guise of legitimate biotechnical or medical laboratories. In the end, it was found that Saddam Hussein had produced and stockpiled massive quantities of biological weapons—including botulinum toxin—but apparently did not use them. In case he had, First Flight's antibodies stood ready to help. And, in Tessler's case and others worldwide, they actually did.

First Flight died alone at age 31 of natural causes on May 17, 1999, in his paddock's long grass at Fort Detrick's Large Animal Research Facility. In "human years," he was over 90 years old. He was cremated and his ashes were buried at Fort Detrick near a small marker dedicated to his service to medical research.

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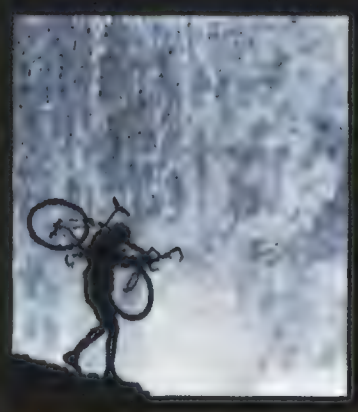

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A Gift of Rhythm and Movement

SMITHSONIAN HIGHLIGHTS

FOR THE PAST TWO CENTURIES, AMERICAN dance has looked to the beat and movements of Central and West Africa for its inspiration. Square dance, tap dance, the jitterbug and many other dances were influenced by long-held traditions brought over by black slaves, a story explored in the exhibition *When the Spirit Moves: African American Dance in History and Art*. The show opens December 14 in the Arts and Industries Building. On arrival, enslaved Africans began adapting their dance culture to the New World. One early African religious circle dance may have been the origin for the practice of "calling" in American square dance. As slaves became Christians, an African custom of gathering in circles became the "ring shout," a call-and-response format for worship and the singing of hymns. In Africa a drumbeat cued the dance movements. In America the leader of the ring shout cued the movements, just as the caller does in square dance. Washington, D.C.-based artist Viola Burley Leak portrays the African influence on American dance over time in the mural "Afro Dance Scan," two scenes of which are shown above. At left, a field worker sets aside his basket of cotton and offers a gift of music to a woman. Out of that, at right, grow generations of new musical and movement expressions. Leak's mural is one of 84 works selected by curators at the National Afro-American Museum and Cultural Center in Wilberforce, Ohio, who organized this tribute to African-American dance heritage. —*Beth Py-Lieberman*

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SMITHSONIAN HIGHLIGHTS

Holiday Events

CELEBRATE THE SEASON AT YOUR FAVORITE MUSEUM

The season is upon us, and holiday happenings around the museums are many. The folks from the Smithsonian's Horticulture Division, creators of our spectacular gardens, offer this year's array of themed holiday trees and handcrafted decorations at most of the buildings; elegant swags and flower displays will adorn the museums' many halls and entranceways.

Come to the National Museum of American History between noon and 4 P.M. on December 26, 27 and 28 to see the six holiday trees decking the halls of the first and second floors (on view from December 8 through January 7) and enjoy a multicultural celebration of American holiday traditions. Visit a Kwanzaa altar, smash a piñata, make Hebrew paper cutouts, watch El Salvadoran toy makers, and enjoy music and dance performances. To celebrate the recent opening of the museum's new exhibition, "The American Presidency: A Glorious Burden," and as part of the holiday festivities, pastry chefs will present a gingerbread White House, and sculptor and master chef Tom Heilman will carve Presidential portraits from blocks of ice.

The National Museum of Natural History invites patrons to enjoy extended hours throughout the month on Fridays. The museum exhibitions and stores will remain open until 9 P.M. Holiday visitors can dine at the Atrium Café and catch an evening showing of the 3-D film "Cirque du Soleil: Journey of Man" at the Johnson IMAX Theater.

At the National Postal Museum, on December 9 and 10, from 10 A.M. to 4 P.M., families are invited to learn about stamp collecting, go on a scavenger hunt, and enjoy celebrity readings from an original manuscript of *The Night Before Christmas*. To find out about other holiday events at the Smithsonian, call 202-357-2700 (voice) or 202-357-1729 (TTY), 9 A.M.-5 P.M., Monday-Friday, and 10 A.M.-4 P.M., Saturday-Sunday.

The Dogs, by Egyptian artist Chant Avedissian, is at the Museum of African Art.

FRANK KHOURY/NATIONAL MUSEUM OF AFRICAN ART, SI

SMITHSONIAN Website

WWW.SMITHSONIANMAG.SI.EDU

At the Magazine's homepage, click on "Events" to go to the calendar and view on-line versions of Smithsonian exhibitions and activities. This month our on-line slide show presents selections from "When the Spirit Moves: African American Dance in History and Art" (p. 46). To view works by SMITHSONIAN's acclaimed photographers, go to the on-line Image Gallery. And visit "Kids' Castle," featuring games and activities for children.

Exhibitions and Events

NATIONAL MUSEUM OF AFRICAN ART

Chant Avedissian: A Contemporary Artist of Egypt (through February 19) A series of panels depicting current and historical images of political figures, divas, domestic animals and everyday objects by this preeminent artist. At left is his 8-foot-tall monotype, *The Dogs*, a work stenciled in paint on corrugated cardboard and bordered with patterned fabrics. It can be carried like a scroll and hung in a variety of ways.

Identity of the Sacred: Two Nigerian Shrine Figures (through April 2) Two different Nigerian societies are examined through a comparison of these tutelary deities.

Audible Artworks: Selected African Musical Instruments (through April 8) Audio stations provide samplings from music played on gourds, drums, thumb pianos and other instruments.

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A fully functional model of a rural mail-delivery wagon is at the Postal Museum.

ARTS AND INDUSTRIES BUILDING

Santos: Substance & Soul (through March 31) Features about 40 Latin American devotional santos. The show was organized by the Smithsonian Center for Materials Research and Education to explain the science of museum conservation.

DISCOVERY THEATER

Performances for the young and old, sponsored by the Smithsonian Associates. Call 202-357-1500 (voice or TTY) weekdays, 8 A.M.-4 P.M.

NATIONAL MUSEUM OF AMERICAN HISTORY

The American Presidency: A Glorious Burden (new permanent exhibition) Nearly 1,000 objects associated with the 41 men who have held the nation's highest office.
Fast Attacks and Boomers: Submarines in the Cold War (through April 2003) Graphics and interactives tell about the role these vessels played in American policy and strategy during this conflict.
Freeze Frame: Eadweard Muybridge's Photography of Motion (through March 11) Early efforts to document time through photographic analysis.

NATIONAL POSTAL MUSEUM

Town and Country (through January 15) Two manufacturers' models of rural and urban mail-delivery wagons, built to 1/6th scale and used by salesmen between 1890 and 1905.

NATIONAL MUSEUM OF NATURAL HISTORY

Forces of Change: Listening to the Prairie (through March 31) An interactive display of items in a shopping cart connects products with the prairie.
Dresden Green Diamond (through January 10) The 41-carat diamond is on view in the Harry Winston Gallery next to the 45.52-carat Hope diamond.
Buccellati: Art in Gold, Silver and Gems (through February 25) More than 75 works from the House of Buccellati, the Italian jewelry and design firm.

NATIONAL AIR AND SPACE MUSEUM

Special Hours: The museum opens at 9:30 A.M. daily, through December 31. *Pioneers of Flight* and *Milestones of Flight* are closed for renovation through July. The Wright brothers' *Flyer*, the *Spirit of St. Louis*, the *Friendship 7* and the moon rock will remain on view.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

Directions—Dana Hoey (through February 19) Lush, colorful images, mostly of women, that hint at narrative possibilities, by the New York artist.
The Collection in Context: Horace Pippin's "Holy Mountain III" (through March 5) A painting portraying a Biblical vision of peace, by the self-taught African-American artist.
Wolfgang Laib: A Retrospective (through January 22) Surveys the work of the German artist.

RENWICK GALLERY, SMITHSONIAN AMERICAN ART MUSEUM

Star-Spangled Presidents: Portraits by Liza Lou (through February 19) These unusual beaded portraits of the 41 American Presidents are on view to complement the new exhibition at the American History museum.
Amish Quilts from the Collection of Faith and Stephen Brown (through January 21) Textiles that convey the spiritual values of the Amish.
Spirits of the Cloth: Contemporary Quilts

SIOBHAN CREEM/NATIONAL POSTAL MUSEUM, SI

by African American Artists (through January 21) Intricate fabric images that explore the artists' heritage.

ARTHUR M. SACKLER GALLERY

Persepolis: Documenting an Ancient Iranian Capital, 1923-1935 (December 3 through May 6) Archaeological materials, drawings, photographs, from the excavation of the Persian city.
India Through the Lens: Photography 1840-1911 (December 3 through March 25) Rich images of India's architecture, landscape and people.
Asian Traditions in Clay: The Hauge Gifts (through April 22) A collection of visually appealing vessels from Islamic Iran, Iraq and Cambodia's Khmer Empire.

FREER GALLERY OF ART

Storage Jars of Asia (through March 10, 2002) Large stoneware and earthenware storage jars, made between the 8th century B.C. and the 18th century.

GEORGE GUSTAV HEYE CENTER, NATIONAL MUSEUM OF THE AMERICAN INDIAN [NEW YORK CITY]

Beauty, Honor, and Tradition: The Legacy of Plains Indian Shirts (December 10 through November 4) Insight into the symbolic meaning of shirts decorated with beads and porcupine quills.
Who stole the tee pee? (through January 21) Historical objects and contemporary artworks provide a context for the social, political and cultural changes that Native Americans have experienced since 1900.

ARCHIVES OF AMERICAN ART [NEW YORK CITY]

Treasures from the Archives of American Art (through January 5) Selections from a variety of artists, collectors, gallery owners and historians are on display at the archives, located at the New York Regional Center, 1285 Avenue of the Americas.

COOPER-HEWITT, NATIONAL DESIGN MUSEUM [NEW YORK CITY]

Masterpieces from the Vitra Design Museum: Furnishing the Modern Era (through February 4) Works by Breuer, Le Corbusier and Wright.
The Opulent Eye of Alexander Girard (through March 18) A retrospective of the work of this mid-20th-century designer and architect who helped define the "look" of the 1960s.

CLOSED FOR RENOVATIONS

The Smithsonian American Art Museum and the National Portrait Gallery will be closed to the public for the next three years. The Anacostia Museum will reopen this summer.

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THE CASTLE—INFORMATION CENTER

Upon arrival make your first stop the Castle's Smithsonian Information Center. At the Associates Reception Desk, open 9 A.M.-4 P.M. daily, learn what's new at the Smithsonian and about other area attractions—with brochures, videos, touch screens, electronic maps and more. Receive special Associates materials and hear about your discount privileges.

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NISSAN

DRIVEN.

PEOPLE OF THE REINDEER

BY JOHN F. ROSS ◆ PHOTOGRAPHS BY SCOTT WARREN

KHANTY REINDEER HERDERS OF NORTHWESTERN SIBERIA HAVE FOUGHT COLD WEATHER AND FOREIGN INCURSIONS FOR CENTURIES, BUT THESE RESILIENT PEOPLE MAY NOT WEATHER THE CURRENT STORM

ALTHOUGH WE'RE TRAVELING OVER LAND, the view from the shuddering orange and blue Mi-8 Russian helicopter is of water. Water defines the pine and bog forests, or taiga, of northwestern Siberia, just south of the Arctic tundra. The rivers corkscrew madly upon themselves, forming oxbow lakes that, in turn, are often pierced by other rivers. Ponds spread across the taiga like craters from bombing runs. Patches of cedar, pine and larch resemble islands pinched between great swathes of ice-crusted lakes. It's May.

Not a single mountain, town or road interrupts the flat, wet expanse. A trackless wilderness spreads below me, so vast that it defies comprehension. If all of Siberia were detached from Asia and formed into its own country, it would be far larger than China, yet it would contain only 2.5 percent of China's population. It is a place that can swallow people, as Joseph Stalin knew all too well when he sent many millions to the gulags here.

After a couple of hours, the helicopter drops us near a lake onto a boggy patch of peat and moss. We are still miles from where we're supposed to be, but the pilots can't locate the camp, and the helicopter has run low on fuel. They touch down for 45 seconds and drop us off, ungraciously it seems to me, without a wave. The only piece of high-tech equipment that I've brought, a global positioning system receiver, reveals that we're 1,100 miles northeast

Opposite: Dusya and Alexei Moldanov tend a herd of 200 semi-domesticated reindeer on the Siberian taiga just south of the Arctic Circle.

Each summer, Khanty herders lure their free-ranging reindeer back into corrals by lighting peat fires, which produce thick smoke that drives mosquitoes away.

of Moscow and 200 miles south of the Arctic Circle. This section of northwestern Siberia, known as the Khanty-Mansiisk District of the Tiumen Oblast, is split by one of the world's longest rivers, the Ob', as it searches for the sea.

Our crew heads into the forest: photographer Scott Warren and I, translator Nuriya Rakhimkulova, 27-year-old Misha Moldanov, his wife, Lena, their 5-year-old daughter, Vika, and a two-week-old white puppy of indeterminate lineage. Our job now is to find Misha's father and mother, who are located somewhere nearby in their temporary spring camp. We all wear rubber boots and haul loaded packs. I've come here to spend some time with a forest-dwelling Khanty family, seminomadic reindeer herders who are members of one of some 33 groups of indigenous peoples spread across Russia's Far North.

Months earlier, Scott Warren had shown me some photographs he had taken of the Khanty (pronounced HANT-ee). The smiling faces of these people, Scott explained, belied a dire situation—oil and natural gas interests, running wild after the collapse of the Soviet Union, are aggressively mining Siberia's vast underground petroleum wealth. This once pristine and remote corner of the world has become one of the world's most extensive petroleum developments. The Russian fever for black gold has hit the Khanty people hard, displacing them from their hunting grounds, polluting their rivers and interrupting the reindeer herder economy. Their traditional way of life as hunters, fishermen and sometimes reindeer herders, practiced for centuries, is drawing to a close in less than a generation. I felt like Karl Bodmer or George Catlin, the painters of the 19th century who traveled west to capture the faces of the American Plains Indians before they vanished. Like Scott, I wanted not only to witness traditional Khanty culture before time ran out but also to learn about the impact of oil drilling and exploration on their lives. Scott mentioned that his friend Misha, a Khanty teacher, would be willing to act as a guide and take us out to visit his parents, who herd reindeer. Scott and I picked up Misha in the remote Siberian village of Kazym and took the helicopter to the camp. Now, with the bog threatening to suck off my boots with each step, I wonder at the wisdom of my decision. But the orange translucence of the

bark on the pines lifts my spirits, and the cool sweetness of the air begins to ease my doubts. I learn to step precisely in Misha's footsteps, so as to avoid patches of bog where I could end up sinking to my waist.

We have been slogging along in this fashion for more than an hour and a half when, off in the distance, I see several Siberian reindeer clumped around a dark object in the moss. They are larger than white-tailed deer and are covered with mottled gray, brown and white fur. Unlike other species of deer, females as well as males grow antlers. As we draw closer, several reindeer bound off in an amusing high-stepped gait, as though they dislike touching the peat. One deer remains, her head cocked in concern. She hurriedly nudges a small, dark creature, which stands up on four spindly legs near its purple placenta. The newborn calf trembles with effort, then promptly falls on its face. By tomorrow it will be able to outrun any of us easily—and have a chance at fleeing from the large brown bears, wolves and golden eagles that haunt the taiga.

A homemade hood provides Misha Moldanov (top) with some relief from mosquitoes. Insects also torment the reindeer (above), which become more vulnerable when they shed their thick winter coats.

Even though skittish, these reindeer are semidomesticated and the property of Misha's parents. Humans have formed a long relationship with reindeer. Paleolithic dig sites reveal that Neanderthals depended on them for food 40,000 years ago; by 15,000 years ago, reindeer featured in cave paintings. Scientists theorize that humans domesticated reindeer between 5,000 and 7,000 years ago, an event that may even predate the domestication of the horse. In the north, where cattle and swine cannot survive temperatures that can plunge to -58 degrees Fahrenheit, reindeer (known as caribou in North America) became the central food source of many peoples of the north, such as the Saami of Scandinavia and Russia, formerly referred to as Laplanders, and the tundra Nentsi of Russia. Two forms of reindeer husbandry evolved, one in the tundra and the other in the forest. The open tundra enabled people to move large herds of reindeer sometimes hundreds of miles between winter and summer pastures. Herders who lived in the forests of the taiga, however, could not easily supervise large herds, so they managed with a smaller number of animals and supplemented their diet with fish and other game. Khanty and other herders in the Siberian taiga are seminomadic, moving among established seasonal camps that may be separated by several miles. Such migration is necessary to ensure that vegetation grows back after reindeer have depleted an area.

During my spring visit, the reindeer browse freely in the wilderness and females deliver their fawns. Come summer, the Khanty will lure the deer back into corrals by burning great piles of wet peat. The thick and acrid smoke created by these fires gives the deer—and the Khanty as well—relief from the clouds of relentless mosquitoes.

After struggling across the flooded taiga for several hours, we finally locate the camp, a simple compound centered around a tall tepee-like structure, known as a *chum* (pronounced CHOOM). Misha runs ahead, like a little boy, to meet his parents, and a trio of dogs erupts with a chorus of barks. We are all greeted as long-lost relatives: I'm hugged and kissed by Misha's mother, Dusya, who barely comes up to my stomach, and by his father, white-haired Alexei, whose wild eyebrows animate his otherwise impassive features.

We stoop and enter the chum. Pine boughs and white reindeer furs with gray highlights cover the ground. No

spot inside is more than ten feet away from the squat metal stove in the center. The tent's skeleton, 26 pine poles, is covered by felt and animal hide. A piece of the bright afternoon sky peeks into the hole created where the poles meet 15 feet above our heads. Alexei brings out a bottle of vodka and pours shots into cups for the guests. Shooing a dog outside, he starts chanting in a low voice, then picks up a mug and throws its contents into the open stove. The inside of the chum explodes with bright orange light. In that moment, the severed wings of an eagle and duck that hang on the wall appear as birds in mid-flight.

"A prayer to the invisible people," Alexei says solemnly, addressing the fire. He chants for the next five minutes, running down a list of various spirit masters representing animals, forests and rivers. Later, he confides that there are as many spirits as trees in the forest. We drink to the parents of the sun and moon, and to the all-powerful bear.

During a visit to his parents' autumn camp, Timofei Moldanov lends a hand by inspecting a fish trap, woven from reeds and sticks and placed in the midst of a stream.

Alexei Moldanov is among the most prosperous of the Khanty reindeer herders living in the vicinity of the village of Kazym. In his seven-plus decades, he has endured Stalin's repressive policies of the 1930s and Soviet attempts after World War II to collectivize reindeer breeders. He and other herders were forced to work together in large state farms. Members of his family participated in a local rebellion that was brutally snuffed out by Stalin's minions. He has watched helplessly as Khanty spiritual leaders, or shamans, who act as intermediaries between the earthly and spiritual worlds, were persecuted, and even executed, as threats to the state. Upon the collapse of the Soviet Union, Alexei came full circle and started keeping his own herds, only to see his people challenged in new ways by petroleum exploration.

Not long after the drinking commences, Alexei shows me his bear. In the homes of most Khanty herders, a bearskin and head occupy a place of honor. Alexei's bear sits outside on a sled. It's the partial remains of an immense Siberian brown bear: a head and paws with skull, bones and flesh removed. Even when dried and flattened to the size of a large pizza platter, the bear still exudes raw power.

The Khanty explain that the bear is the son of Torum, master of the upper, or sacred, region of the cosmos. One day long ago, Alexei relates, the bear looked down from his vantage high above Earth and became intoxicated with the rich tapestry of green, brown and yellow colors. He asked his father for permission to visit, but Torum forbade it. After much discussion, however, Torum agreed, on the condition that the bear not disturb Khanty reindeer herds, storage sheds and burial places. The bear promised, and a cradle lowered him to Earth.

Attacked by voracious mosquitoes, and constantly wet and hungry, the bear cried, "Where is that beautiful carpet I saw from above?" In his hunger he forgot his father's admonitions and killed reindeer, attacked storage sheds and, finally, in the anger of his impotence, desecrated a Khanty cemetery. Mother Earth decreed that the bear must be punished, and so a Khanty hunter killed it. One of the bear's multiple spirits flew into the sky to be with Torum, while the rest remained on Earth, scattering to populate sacred places. As Alexei tells me this Khanty legend, I reflect that even the gods acknowledge that life in the Siberian taiga is anything but easy.

Khanty hunters don't actively hunt bears, although they are permitted to kill a bear if they encounter one. Unlike Westerners, who are taught to wear bells on their shoelaces and talk loudly on trails in bear country, the Khanty walk quietly and talk softly in the forests, out of reverence for the bear. Traditionally, a bear killing launch-

Misha's wife, Lena, hangs fish to dry outside the chum, a temporary spring shelter. The Moldanovs supplement the reindeers' natural diet with fish throughout the year.

es a multi-day ceremony in which the story of the bear serves as a narrative device in songs and dances to express the Khanty worldview, geography and ancestry. The Khanty people have more than 100 different words and terms for bear, including my favorite, which translates as "host of the forest."

Work resumes the next morning: women cook bread in a large outside oven and carry water from the lake a hundred yards away. Alexei trims a bloody growth that covers a deer's right eye while Misha immobilizes the terrified creature in a headlock. A yearling named Butterfly wanders by for a look, along with White Nose, Baby and My Bull. As any good shepherd, Alexei knows not only the names of all of the deer in his 200-head herd but their personalities, ages and genealogy as well.

Like gentle apparitions, several reindeer always seem to hover in the vicinity of camp, and I get used to their benign presence and their frequent snorting and coughing. Occasionally one will poke its long head through the flap of the chum. It's springtime, so soft velvet covers their short antlers. One afternoon as I am brushing my teeth outside, I look up and am startled to find a reindeer with a bright white coat staring at me intently from only a few feet away. Its black eyelashes seem to float on its milk-white face. White-coated reindeer are not common in the forest and are a sign of a wealthy Khanty herder.

During the day, few moments are wasted. Misha and I head off to go fishing. He drags a tiny Khanty aluminum canoe across the bog to a lake where a larger boat that I'll use is waiting. The boat is barely big enough to hold my frame; only three inches of clearance separates me from the chill water.

We wet our hair with cold water from the lake, and Misha teaches me a Khanty prayer, which translates, I later find out, as "so that the boat floats on the water like on grease," a supplication to the spirit of the water. We pass from the lake into a maze of small waterways, marsh grass

Dusya brings out the ceremonial bear head and places it in a tree with a good view of the stage.

rising up on either side of us. Eventually we come to a length of river flanked with two tall poles, one near each bank. Between them hangs a net, filled with pike and perch. We start at opposite poles, working our way toward the center of the river, pulling the net up against our boats until we are soaked and shivering, and we untangle the fish from the net.

As the fish splash us, Misha tells me that his wife, Lena, is pregnant. He has an eager grin, a wiry frame and adventurous dreams of paddling across the Bering Strait in a small boat. Although he makes his living as a teacher in the village of Kazym, he feels drawn to forest life, he confides, and would like to take over his parents' herd. Yet his wife and daughter want not only the creature comforts of the village but its opportunities as well. To them, life in the forest represents hardship. In Kazym, where I first meet Misha, he had seemed edgy. Out here he comes alive.

Minutes after the sacrifice of a reindeer, Misha and his daughter, Vika, enjoy a feast of raw meat, each piece dipped in salt or fresh blood.

I've gone on several walks with him after dinner when the extended dusk of the high latitudes, known as white nights, turns the taiga into a soft sea of pastels well past midnight. But the hikes turn into many-hour ordeals, and soon I tire of them. He seems to be walking to escape from something, and I can't keep up. The new pregnancy translates to more responsibility and the need to keep his job in the village. He'd rather be working with the reindeer, but that would mean separation from his daughter and wife. Of the approximately 20,000 Khanty, only about 60 percent speak their native language, and a much smaller percent live in the forest, and both numbers are declining. Of Alexei and Dusya's five children, only Misha is interested in living in the forest.

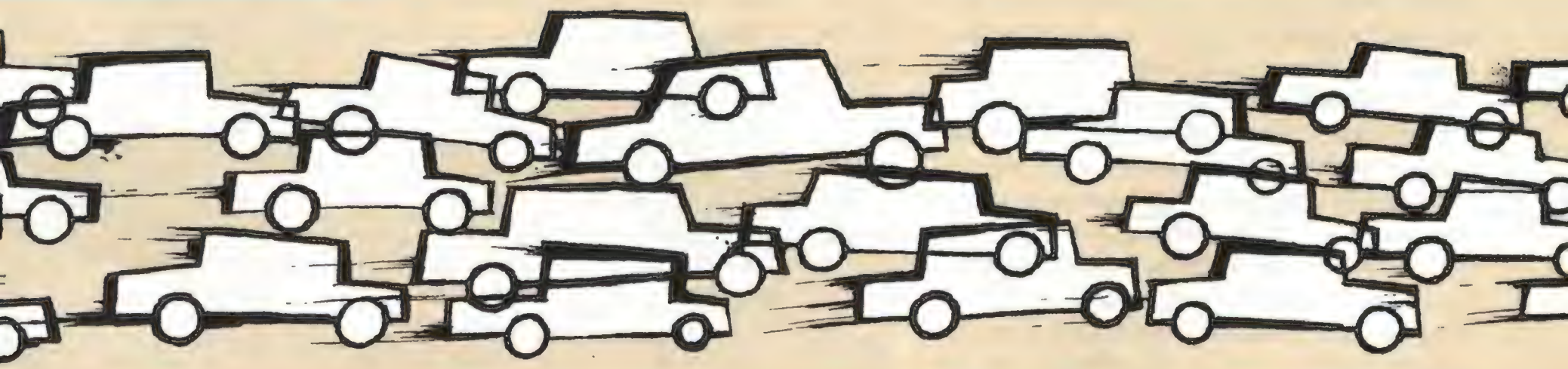
When our boats touch in the middle of the river, Misha dumps most of his catch into my canoe. The lower half of my body is obscured by still-twitching fish; I ride even lower in the water than before. Although the Khanty depend on fish in their diet, most of this catch will go to the reindeer, who have a fondness for dried fish. Misha tells me that the fish his parents give the reindeer often enable the animals to survive the winter.

Back at camp, Alexei has tethered a reindeer to the trunk of a pine in the deep moss near the edge of the lake and sits nearby sharpening his knife. A cool, brisk wind blows off the lake while Dusya brings out the ceremonial bear head, wrapped in a red scarf, and places it in the branch of a tree with a good view of this impromptu stage. Misha makes a fire, struggling to keep it from blowing into a nearby bush. Lena brings out a square table with stubby six-inch legs, a kettle and a bucket. Dusya throws fungal growths taken from birch trees into the fire, where they smolder and give off a woodsy smell.

Misha and I each wind a rope around the reindeer's neck and step back and apart, holding the animal so it can't move. The victim, Alexei explains, is a 13-year-old deer that belongs to one of his sons. Without missing a beat, Alexei picks up an ax and, with a powerful blow, knocks the dull end against the top of the bull's skull. It sinks to the moss and dies. We all turn clockwise seven times, bowing and yelling "ooohh!" Then Dusya and Alexei chant the names of gods: "Goddess of the earth, accept this spirit from us; Spirit of the forest, accept this spirit from us..." Alexei flings the rope that held the bull into the branches of a nearby tree. If a knot forms when he pulls it down later, the spirits will have been satisfied with our efforts.

The butchering begins, a surprisingly quick process that is largely bloodless after Alexei ties off several arteries.

Going our way?



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TODAY TOMORROW **TOYOTA**

When snowmelt floods the taiga in summer, transportation is often limited to small canoes (above). During winter, Khanty can travel more quickly by using reindeer-pulled sleds (right).

They take extra care with the fur at the hooves, which will be used to fashion winter boots. Every part of the animal will be used, from the bone (for knife handles) to the sinews (for sewing). Although Alexei and Dusya are subsistence herders, they will occasionally sell live reindeer and reindeer meat to buy necessities they can't manufacture themselves. Then Alexei's knife exposes the large nasal cavity. Inside, a fist-size mass of yellow, pulpy maggots writhes and seethes, the larvae of flies that have crawled in through the nose. I suddenly understand why the reindeer snort so much: they must be trying to expel these maggots from deep within their sinuses.

Raw reindeer meat is rich, chewy and gamy, and it sticks uncomfortably in my throat. I welcome a proffered cup of tea as an excuse to move away from the bloody table. When everyone is finished, Misha digs a hole in the moss and places the meat next to the frozen earth. The sinews running along the backbone are hung up in a tree to dry for eventual use in sewing and lacing. The skin will be scraped, cured with a mixture of fish guts, and used for bedding on a sled. We carry the bucket of blood back to the chum. The following day we make blood bread, bright-pink pancakes fried over the fire. It's then that we taste the blood, thin and rich like liquid meat.

For the past few days, Alexei has walked with a grimace, his arm pressed to his lower back. I learn that another herder had struck him savagely in the back with a log during a dispute over a reindeer years ago. Old age and a life of labor have aggravated the injury. Each day, he lines up a veritable arsenal of medicines: an elixir of Siberian ginseng and ground-up deer antler; black gunpowder that he rubs in his eyes; rancid bear fat smoothed onto his chest; chewing tobacco cut with ashes from the fire. I offer to give him a massage and a couple of tablets of ibuprofen.

His back is scarred terribly, his skin thin and bloodless. But the massage seems to provide him a few hours of ease, and later I give him a couple more. The third time something peculiar occurs. I feel as though I've sucked his aches right through my fingertips into my own body. I'm a man of modern medicine, with not much patience for New Age explanations, but my body feels heavy.

When I mention this to Misha, he says in a matter-of-fact tone that his father has spirits in him that have moved to me. He pulls some birch fungus from the fire, places it

The Khanty attribute many mysterious events to a group of spirit people who are like them but invisible.

in a bowl and directs me to stand with one foot raised. Misha passes the smoking bowl under my foot. Then I lift the other foot, and he repeats the motion seven times. As Misha predicts, the spirits flow out of me into the ground where they belong: the heaviness leaves me within a half hour. Had an incident of this sort happened at home, I would have shrugged it off as nothing more than the power of suggestion at work. Yet out in the taiga and immersed in the Khanty world, where every action resonates with spiritual significance, such things take on a different cast.

Later that day, Alexei notices that a rope has moved from where he placed it. "Must be the invisible people," he says. And that launches a discussion of missing puppies, lost axes and strange events that have occurred over the course of his life. He and many Khanty attribute such mysterious events to a group of spirit people who are like them, only invisible. Sometimes these spirits become visible, and occasionally they can lure a person over to their world. Khanty children are told never to have dinner with strangers in the woods, because they may be invisible people who have materialized. Just sitting down to one meal, strangers. After spending time here, however, I'm not so sure that strict pragmatism is the sole explanation for their rich spiritual life. Out in this Siberian wilderness it's not possible to tell where the practical ends and the mystical begins.

I'm also forced to reexamine my assumption that the people of the remotest corners of Siberia have been closed off from the rest of the world by their geography. In fact, the Khanty have had a great deal of contact with outsiders over the millennia. From archaeological, linguistic and folkloric evidence, Georgetown University anthropologist Marjorie Mandelstam Balzer surmises that some of the Khanty's nomadic ancestors came north from the steppe in the ninth century, perhaps fleeing Christianization. Linguistically, they speak an Ob-Ugrian language of the Finno-Ugric branch of the Uralic family. They share the Ugrian language with their indigenous neighbors, the Mansi, and the Hungarians. It appears that the Khanty learned reindeer herding in the 15th century from the Nentsi people who live to their north. Over time, Turks, Persians, Cossacks and Russians have forced them to adapt; often the Khanty have incorporated major elements of the dominant culture while at the same time maintaining the integrity of their own. A Christlike god as well as a Turkic god inhabit their pantheon, yet the Khanty remain neither Christian nor Islamic. "The Judeo-Christian outlook," Hungarian anthropologist Eva Schmidt tells me, "doesn't make sense to the Khanty, who are nomadic and fighting for their lives every day in a harsh environment." Their oral history remains remarkably fluid, and information gleaned one day from a radio broadcast may be incorporated into a legend the next day.

Recent events, however, may prove more overwhelming than anything these resilient people have endured to date. The collapse of the Soviet Union opened up Siberia to wholesale drilling by private oil companies. Alexei tells of the time when Russian geologists came to this area during perestroika in the late 1980s. They drilled for oil near a river, and it soon became polluted and many fish died. The oil workers shot reindeer from helicopters for the fun of it. And someone's cabin burned down. These interlopers were loud and disrespectful in the forests and angered the invisible people, Alexei says. During one of our conversations, Alexei declares that dying trees and dead ponds in one area resulted from acid rain created by refineries to the south.

the Khanty say, can erase one's memory of being human.

Some anthropologists might say that the Khanty have invented the spirits and invisible people out of necessity, to explain the inexplicable in an environment both harsh and capricious. Certainly, many of their beliefs and legends do contain information vital for survival, such as not eating with

Constantly in motion, Dusya (left and above, in foreground) rarely takes a break from endless chores, a hard way of life that's off-putting to the new generation of Khanty.

Even more worrisome are the oil derricks that have displaced a Khanty family and destroyed a sacred grove 150 miles to the west. Alexei has good reason to be alarmed. Russian scientist Dmitri Syrovatski estimates that the reindeer population has decreased 28 percent between 1991 and 1997 in the Khanty-Mansiisk region and even more in other parts of Siberia. Natural gas exploration removes large tracts of grazing pasture, forcing reindeer to forage on increasingly smaller parcels of land. This results in overgrazing and the destruction of habitat. Two Russian scientists estimate that gas and oil fields and main pipelines have destroyed 965 square miles of plant cover in northwestern Siberia. It's especially difficult for the fragile taiga ecosystem to rebound after such depredation. For the past several years, Andrew Wiget of New Mexico State University, and independent Russian scholar Olga Balalaeva, have led an effort to establish a large reserve for the Khanty, but it's unclear whether their work will be too late.

Later, after I take the helicopter back to Kazym, Alexei's daughter-in-law, Tatiana Moldanova, tells me about her and her husband's group, Save the Ugric People. They are working to establish cooperatives wherein Khanty herders can sell reindeer meat, and pool resources. They've consulted with the oil companies on how to minimize the effects of drilling, roads and pipelines, and have recommended establishing corridors for the reindeer and the Khanty to travel seasonally. But she is not optimistic. "In the next ten years," she says, "reindeer herding by the Khanty will be vastly reduced or will disappear altogether. Most of the traditional ways of the Khanty will vanish."

I play devil's advocate and tell her about the group of Khanty and Nentsi children that I canvassed in Kazym, the location of a regional boarding school for indigenous children, some on leave from their herding families in the forests. Did they want to herd reindeer when they grew up, I asked? The students looked uncomfortable when I posed the question, but they almost uniformly said no. The pull of the village and its creature comforts prove too strong a draw over the tough life of herding. Times change, I tell Tatiana: What's the matter with the Khanty changing, too, and adapting Khanty customs to life in the village?

She answers my pushy question sagely, with a metaphor. Do I know of the maroshka berry, she asks? I do. It's a yellow fruit that grows in the bog. On our long treks, I look eagerly for this and other berries: I find them rejuvenating, tart and refreshing, cutting the dryness from my mouth during long slogs. "This particular berry," she says, "will never grow in a greenhouse, like a rose. It needs stinky swamp air and wet, boggy conditions. Otherwise it will die, even with the purest of water and the best fertilizer. In this world, you need not only the beautiful rose but the maroshka too."

On the last day I spend in camp, the mosquitoes come, rising from the earth like an early morning fog. And I know that this is only the beginning. According to Alexei, the mosquitoes become so dense that they kill reindeer calves, making them so weak that they succumb to disease. "But," he says with a smile, "the mosquitoes also keep away the outsiders." Whether or not the mosquitoes will help protect the Khanty from the newest threats only time will tell. In the meantime I marvel at the ingenious partnership that Alexei, his family and the Khanty people have forged with this beautiful but harsh land.

Senior editor John F. Ross is author of Living Dangerously: Navigating the Risks of Everyday Life. *Scott Warren won a 1999 Alicia Patterson Foundation fellowship to photograph the Khanty.*

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WARNING: Log-o-phil-ia is Addictive

BY RUDOLPH CHELMINSKI

IT IS A LOVELY SATURDAY AFTERNOON IN COLUMBUS, OHIO, BUT the word master is neither golfing nor fishing, nor taking his ease. Seated at one of those desks that you put together from a kit, peering intently into the screen of his PC, Anu Garg scrolls through a backlog of e-mail while I look over his shoulder. Hmm, let's see now. Cindy admits to being a *biblioklept*. Heather Schoup wonders what sort of anagram could be made from the letters of her name. (Hundreds. How about *oh, the purchase*, to go with *cheap shoe hurt*?) William Harris, professor emeritus of classics at Middlebury College, has some interesting thoughts about *bibliomania*. But *bibliolatry* has proved to be trouble. One definition, "extreme devotion to or concern with books," went over fine, but the other, "excessive adherence to a literal interpretation of the Bible," was a hot potato. "I am

WORDS FILL ANU GARG'S DREAMS, AND WAKING HOURS TOO. HE SHARES HIS FAVORITES ON THE WEB WITH THOUSANDS

PHOTOGRAPHS BY MARK TUSCHMAN
DIGITAL IMAGING BY CHRISTIANA FACHIN

LAZARETTO (laz-uh-RET-o) also lazaret or lazarette (laz-uh-RET) noun

1. A hospital treating contagious diseases.
2. A building or ship used as a quarantine station.
3. Often lazaret. A storage space between the decks of a ship.

a Christian and do not partake of undesirable words," sniffs an unnamed objector. "Please send me no more words that I would not choose to add to my life."

Oh, dear. Garg has got himself into a pickle again. He meant no harm, never does, but his love of words—*logophilia*, or perhaps more accurately, *logomania*—tends to lead him into semantic ambushes. Back in his student days, he never imagined that his nice little idea could entangle him in controversy. But then he never imagined just how much that little idea would grow, either, or that one day it would transform him into something like an international star.

SOMETHING FOR NOTHING

EARLY IN 1994, ANU GARG WAS A scholarship student from India, nearing the end of his studies for a master's degree in computer sciences at Case Western Reserve University in Cleveland, where he worked on a library project for making books, music and journals accessible to computers via the Internet. Roaming electronically through a vast supply of material, he discovered some raw databases for dictionaries and thesauri. Getting to them was complicated, though, so he took it on himself to design a "wordserver" that simplified procedures enough to allow anyone equipped with a computer to reach them by e-mail. He notified his fellow grad students that Dictionary by Mail and Thesaurus by Mail were available for consultation, free of charge. "Wordsmith," he named his new service.

He had another idea, too, one he had been noodling with for a long time. Wouldn't it be nice, he thought, if he could be greeted by a different word on his terminal every morning when he logged in? Inevitably, a second idea followed the first: Wouldn't it be great if other people could share that word?

He set to work, and on the 16th of March that same year, two new entries appeared on Linguistlist, the e-mail directory of the linguistics departments of Eastern Michigan University and Wayne State University. The first, rather grand, concerned a new philosophy and literature e-mail symposium sponsored by Johns Hopkins University Press. The second, posted by Garg, was considerably shorter, introducing itself with a single diffident line: "I have created a wordserver which will mail out an English vocabulary word and its definition to the subscribers, every day."

Scholarly surfers visiting that arcane site doubtless gave a mental shrug, moved on to more important matters and forgot about Anu Garg, whoever that was. Little could they suspect that they were skimming past the birth of what has since become a truly globe-circling cyberphenomenon, one of the most intelligent and pleasantly addictive free services available on the Web: AWAD, A Word A Day, which can be found at www.wordsmith.org.

Like most great ideas, it was so simple that anyone could have thought of it: just a word, its definition, its etymology, a quote showing it in use and maybe a few reflections about it. Not just any words, of course, but preferably obscure ones, or big ones, or weird ones, or funny ones—in short, words that were interesting. No lack of that in English. The scavenger language *par excellence* (there you go), our idiom happily takes to its bosom any word, any phrase, any invention from anywhere, and adopts it as its own. The result is a total vocabulary of maybe two million words. French, by comparison, is officially limited to some 50,000 words, every single one of them brushed and disciplined and nose wiped clean by the Académie Française, the national nanny.

"English never met a word it didn't like," Garg mused as he browsed through his reference books, and he felt much the same way himself. At the start of AWAD, he acted like a famished man at a smorgasbord, grabbing words at random simply because he liked them. His first week's selection offered a suitably eclectic borrowing from Greek, German, Latin and French: *zephyr, zwieback, prophylactic, sidereal, demesne, dressage* and *arboretum*.

WORDSMITH ON A ROLL

LIKE A BENIGN VIRUS, AWAD HOPPED from computer to computer as devotees offered "gift subscriptions" to their friends. Within a year Garg found himself addressing his daily word to 10,000 strangers and within two years, to 35,000. In late summer 1996, he hit 50,000. Wordsmith was on a roll, thanks to the addition of an acronym and anagram service (computers are terrific for that kind of mind-numbing slog through letter combinations) and Garg's decision to choose words according to themes.

Madeleine Robinson, CEO of LPS Industries, Moonachie, New Jersey

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PODSNAP (POD-snap) noun

1. A person embodying insular complacency and self-satisfaction and refusal to face up to unpleasant facts.
(The name of a character in Dickens' *Our Mutual Friend*.)

The themes alone went a long way toward defining the man by the multiplicity of his interests. Garg is a computer engineer by academic training and vocation—he now works as a consultant for AT&T in Columbus—but his real passion is literature, language and art, and it shows in his themes: words from classical mythology, words from Hindi and Sanskrit, words from chess, words from *Catch-22*, from William Faulkner, from Scott Joplin songs, from Jonathan Swift, Sir Arthur Conan Doyle, Patrick O'Brian, Tintin comics, Maya Chandrasekaran.

On and on rolled the themes and their corresponding words, and as the number of subscribers rose, so did the amount of feedback by e-mail, through which Garg maintains an ongoing dialogue with fellow linguaphiles around the world. Most of the feedback is adulatory, some critical (his public loves to catch him in mistakes, or at least pick nits) and some downright nasty. By now, AWAD has nearly reached the 400,000 mark, with subscribers in about 200 countries. (Garg figures the true number of AWADdicts might be closer to half a million if the pass-around effect of linked computers inside companies is factored in.)

What is it they all see in this thing? I found out early in 1999 when I got on to AWAD the way most people do—a friend just signed me up. One of the first themes I encountered was "words that go out of their way to not apply to themselves," and its star was *hemidemisemiquaver*, the longest word for the shortest musical note (1/64th). "Eponyms" and "toponyms" were fun, and "words with slightly different spellings from everyday words" was instructive: *calender, navvy, quean, dragoon, wether* (so *that's* where "bellwether" comes from!), *hight, angary*. But where Garg really zapped me was with his challenge to discover the mystery theme behind the words *tessera, hypolimnion, decerebrate, homonym, extravasate, minim* and *reverberate*. All of them were words that could be typed by a touch typist trained on a standard QWERTY keyboard using only one hand—right or left. That week he received more than 900 guesses, of which 24 were correct. To the first one to get it right, Garg sent his electronic (and waggish) AWArD: a lifetime supply of the English alphabet for his keyboard.

A PUN FOR THE BIRDS

A JOKER HIDING BEHIND A POKER face, Garg loves wordplay and savors puns, the more outrageous the better. When he proposed the theme "bird words" (*rictus, psittacine, avifauna, ornithology, struthious, oology, nidifugous*), he gave authoritative citations for each, but for *struthious* (of or relating to ostriches) he could not resist asking: "Do people who wear clothings made of struthious skin get ostracized?"

How about "words that prompt you to say 'eschew obfuscation'"? Garg offered *splendiferous, philoprogenitive, comestible, pulchritude, apothegm, cerumen* and *pronunciamento*. For words that violate the old spelling rule that *i* comes before *e* except after *c* or when sounded as *a* (*neighbor, weigh*), he gave us the nicely seditious selection *meiosis, poltergeist, plebeian, reveille, mythopoeic, allogeneic* and *henotheism*, but he left out the weirdest of all: *weird*.

REAL VS. SYNTHETIC

WHEN GARG PROPOSED THE THEME OF "looong words," the heavyweight champion proved to be *pneumonoultramicroscopicsilicovolcanoconiosis* (a lung problem caused by inhaling quartz dust), but it is one of those coined scientific terms cobbled together from several words, and he is reluctant to accept such creations as anything other than synthetic curiosities. (It happens all the time in German, which moved Mark Twain to remark that "some German words are so long that they have perspective.") Garg prefers to fall back on every schoolkid's favorite, good old *antidisestablishmentarianism*. Of course there's also *hippopotomonstrosesquipedalian* (of or pertaining to very, very long words), but some readers complained it was a made-up word. To which Garg retorted: Aren't *all* words made up?

The three hours a day Garg spends on thinking up new themes and finding words and citations to accompany them—"my other life," as he refers to Wordsmith—are not nearly enough for him to individually answer his hundreds of daily e-mail queries, so he pulls out a selection for comment in his sporadic on-line publication, *AWADmail*. It means more after-hours work and more weekends sacrificed to logophilia, but it's a first-rate bonus for AWADdicts, because it gives him the occasion to ramble away from straight word listings into all sorts of linguistic curiosities.

Take *ghoti*, for instance, which several readers sent in. This old standby,

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SATYAGRAHA (suh-TYAH-gruh-uh, sut-YAH-gru-ha) noun
1. The policy of passive resistance inaugurated by Mohandas Gandhi in 1919 as a method of gaining political and social reforms.

generally attributed to George Bernard Shaw, uses English's maddeningly inconstant spellings and pronunciations to reach an unassailably logical conclusion: *gh* as in "rough," *o* as in "women" and *ti* as in "nation." The result? It's pronounced "fish."

ESCHEW GAS-GUZZLERS

THERE'S ALSO THE MATTER OF PANgrams, phrases that use the entire alphabet with the smallest possible number of letters. Every beginning typist knows "The quick brown fox jumped over the lazy dog's back," but that is a horrifying gas-guzzler of 41 letters. Much better at 27 letters, Garg reported in AWADmail, was "Nymphs vex, beg quick fjord waltz," but the best one he found, with 31 letters, was "Jackdaws love my big sphinx of quartz."

Do you know what a *lipogram* is? Anu Garg does, and can tell you who committed them. The word refers to a writing composed of words missing a certain letter. *The Odyssey*, a poem by Tryphiodorus, written in Greek, contained no *alpha* in the first book (entitled *Alpha*, naturally) no *beta* in the second (entitled *Beta*) and so on. More recently, in our own alphabet, both the American Ernest Vincent Wright with *Gadsby* and the Frenchman Georges Perec with *La Disparition* wrote entire books without the letter *e*, the most ubiquitous of vowels. Perec followed up with *Les Revenentes*, in which the *only* vowel used was *e*.

Garg and his electronic correspondents had a ball when he threw *mondegreen* at them. A mondegreen is a cockeyed new word or phrase resulting from mishearing a proper word or phrase—a cousin, if you like, of a malapropism. Mondegreens are mostly committed by kids in the early stages of learning the language, but adults are not immune. A recent and celebrated example is the record store clerk who couldn't locate the Gershwin disc *Rap City in Blue*. Others that AWAD subscribers came up with included "Hemlock remover" for Heimlich maneuver; "Farmer John Cheese" for the stuff you sprinkle on spaghetti; "mister meaner" for misdemeanor; "youth in Asia" for euthanasia; and the scrambling of a grand old hymn with "What a Friend We Have in Cheeses."

WHAT ENDS IN GRY?

ONE QUERY GARG RECEIVES SEVERAL times a month has by now gained near-mythical status. It was enunciated by a mystified subscriber in November 1995: "Hi, I hope you can help me. A friend of mine asked me a question that's been driving me crazy . . . The question is: Angry and Hungry both end in the letters *gry*. There are only three words in the English language that end in *gry*; I gave you the first two. What is the third one?"

Answer: there is none. Or, rather, none of any general usage. But if you delve into the unabridged *Oxford English Dictionary* you can locate *puggry*, *iggry* and *anhungry*. And if you are really determined to be a bore about this, you can also find the word *gry*, just like that. (A gry is a unit of measure for 1/10th of a line, or anything that is extremely small or of limited value.)

When I traveled to Ohio to meet Garg I discovered him to be a soft-spoken 33-year-old with brown eyes, an affable manner, an undisciplined shock of black hair and a sly sense of humor. He had an ordinary PC in the spare bedroom of a two-bedroom apartment in a rambling complex overlooking an artificial lake. As his wife, Stuti, prepared a vegetarian lunch and their 3-year-old daughter, Ananya, demanded attention with a half-consumed nectarine in her fist, Garg fired up his PC for a behind-the-scenes tour of Wordsmith. Running me through a selection of recent feedback while placating Ananya, he explained that his little computer was only the command console for a big commercial server in California that contains his clever programs and handles AWAD's memory-heavy work. An Internet man through and through, Garg trolls electronically through the unabridged *OED*, thus saving space on his shelves, not to mention the $3,000 or so that a purchase of the Brobdingnagian (sorry, it's catching) tome would cost him. In the Internet spirit of cooperation, he enjoys pro bono help from Todd in Pittsburgh (for the server) and Emery in California (copyediting), neither of whom he has ever met personally.

"Everything is virtual," he told me happily, although the $400 check he has to write out each month to pay for the use of the server in California is rather more tangible. But never mind. "I receive what you could call psychic income from AWAD. And with the grace of God we can afford it, so it doesn't bother us."

After lunch Garg took me on a tour of Columbus and, unsurprisingly, the first stop was the astonishingly well-equipped public library ("the best place in Columbus") and the second stop was the new science museum on the banks of the Scioto River. At the museum, he gazed approvingly at the children pedaling a counterweighted unicycle on a cable stretched across

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Taking a break from his wordsmith duties, Anu Garg attains bliss on his unicycle.

the entry hall. Garg has a unicycle himself, and he enjoys navigating the parking lot of his apartment complex perched high upon it, beaming benevolently and thinking polysyllabic thoughts. He also juggles, and is considering tightrope walking, which only seems natural, given the symmetry to his daily word juggling and the tightrope of sensibilities he treads. It was with a tear in his eye that he rejected *onanism*, one example of an eponym, for fear of offending parents whose young children might be peeking. But, lacking American cultural references and cues (his entire education before Case Western was in India), he innocently strayed into minefields with *Jesuit*, *shylock* and *niggardly*.

"Now I realize that words can be so loaded," he told me repentantly. The experience has taught him to be even more careful in making his selections, but he can hardly be blamed for the material his computer delivers. He was bemused, for example, when his Internet Anagram Server (*I, rearrangement servant*) rescrambled "mother-in-law" to come up with *woman Hitler*, and positively abashed to admit to me that "New York Times" made *monkeys write*. But, he was pleased to add, "Smithsonian Magazine" translated into *honest in amazing aims*.

I could sense that his own aims were hardly less amazing. "There are occasions when words fill my dreams," he had e-mailed me before we met. "There are exotic species of words jumping out inviting me to play. Finally I weave them into a theme, a garland of words."

A SENSE OF MISSION

BUT TO WHAT PURPOSE? WHEN I HAD him cornered in his apartment, I asked him whether all this translated into something grander, like a sense of mission. "Yes," he admitted shyly, "very much. It's my way to make some small change in the world. Improving people's vocabulary, helping them to speak and write in a more precise way, makes for more intelligent discourse. And certainly accuracy and enlightenment go together. My own effort is to help sprout a thousand little communities that share a common vision of love of words. I have a dream where society will replace guns with dictionaries."

Wow. Nothing but that. The next day, as I flew back to cynical, world-weary France, where I live, I can't say that I was converted to his vision or even convinced that it has a chance, but I was certainly impressed. The world could use a lot more dreamers like this one, and I'm sure that if they are going to proliferate, it will be in America, and not in a country limited to a mere 50,000 words. So, blessings on your head, Anu Garg, but don't forget: first things first. I'm waiting for tomorrow's word.

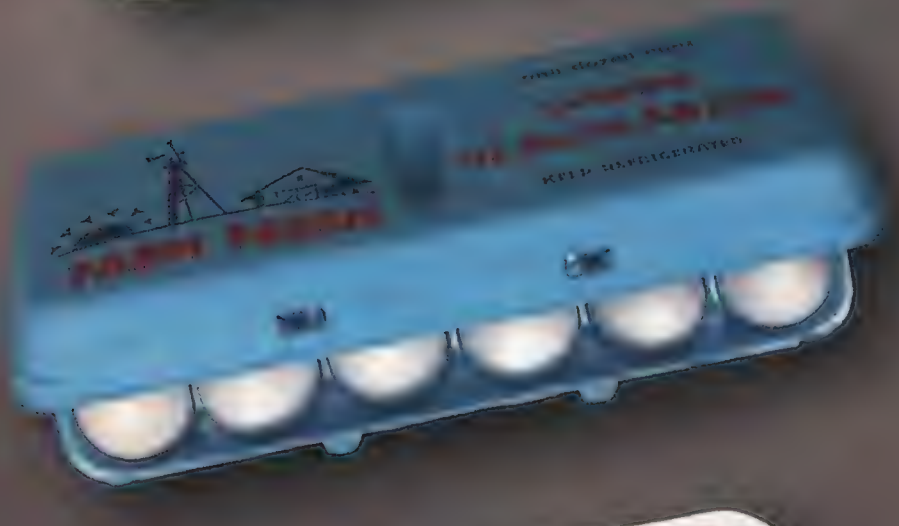
TERPSICHOREAN

(turp-si-kuh-REE-uhn, turp-si-KOR-ee-uhn, -KORE-) adjective

1. Of or relating to dancing. 2. noun. A dancer.

Rudolph Chelminski fed his name into the AWAD anagram server and got Limp Hindu Sherlock. Photographer Mark Tuschman found that increasing his vocabulary can be a lot of fun.

Items you should check to see that they're certified:



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Representative

May 11, 2000
10:47 AM

Investor: We're thinking very long term today.

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Investor: Yes. That and the fact that our daughter just this morning blessed us with our very first grandchild.

Fidelity Rep: What a great day this must be for you!

Investor: It certainly is. And so when I say long term...I mean 18 years or so. You see, my wife and I would like to start a Fidelity account for his future. Today, I'd like to buy some shares of General Electric for him and some Oracle...or maybe a Fidelity fund.

Fidelity Rep: We can certainly do that for you, sir.

Investor: I think those will be good long-term investments.

Fidelity Rep: Let's get you started. What's your grandchild's name?

Investor: Ernest.

Fidelity Rep: Ah. That's a good, strong name.

Investor: He was named after me.

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Inscribing The Word

AT A SCRIPTORIUM IN WALES, CALLIGRAPHERS ARE APPLYING MEDIEVAL ARTS TO CREATE THE 21ST-CENTURY SAINT JOHN'S BIBLE

WARM SEPTEMBER SUNLIGHT ANGLED through a wall of windows at the small scriptorium near Monmouth, Wales, where several calligraphers and artists bent over drafting tables. They were working on the first Bible to be written and illustrated entirely by hand since the invention of movable type more than 500 years ago. Their concentration was so intense that the only sounds in the room were the sharp scratching of quills against vellum and an occasional soft intake of breath. Worktables held the tools of the trade: small piles of gold leaf, brushes to apply it, blunt hematite burnishers to polish it, jars filled with quills, bottles of soot-black ink, small tins of brilliant hues.

On a large table off to one side lay a painting that glowed with a light of its own. It was the first completely finished illumination for the new Bible, rendered entirely with millennium-old techniques. At its center was a menorah in dazzling vermilion representing the family tree of Christ. Modern touches, such as strands of DNA, twined gracefully up the branches. In bold black lettering, the names of Jesus' ancestors, in English, Hebrew, and Arabic—for Sarah's handmaiden Hagar, the mother of Ishmael and an ancestor of Mohammed—stretched back to Abraham. Created for the Gospel of Saint Matthew, the illumination is intended to be a stepping stone from the Old Testament to the New, a way of showing the oneness of past and present. It is also a part of what promises to be one of the extraordinary undertakings of our times.

It was shortly before Christmas 1995 when Brother Dietrich Reinhart, presi-

The opening page for the New Testament (left) depicts the genealogy of Jesus. The scribe's tools (inset) include a quill pen, held in right hand, and an ivory pointer, used for steadying vellum.

BY PER OLA & EMILY D'AULAIRE
PHOTOGRAPHS BY MICHAEL FREEMAN

In Wales, calligrapher Donald Jackson, right, confers with natural history illustrator Chris Tomlin, who traveled to Minnesota to collect botanical and entomological specimens.

dent of Saint John's University in Collegeville, Minnesota, and Father Eric Hollas, director of the Hill Monastic Manuscript Library there, headed south on I-94 for a dinner meeting in Minneapolis-St. Paul. Hollas decided this was a good time to broach his superior with a question that had been nagging him for months. "You know, Dietrich," he said with a casualness he didn't feel, "Donald Jackson would like to handwrite and illuminate the Bible and wonders if we would support him."

It was a staggering request. Not since scribes labored inside medieval monasteries had the Bible been written and illustrated by hand. "How could we ever do it?" thought Reinhart at first. "How could we finance it? Aren't we busy enough already?" Then he considered the significance of a Bible that could last a thousand years or more. Saint John's University was already known for its manuscript collection. Might it be the perfect place to sponsor, display and preserve such a work? Could it become a historical achievement of epic proportion? Suddenly Reinhart burst out with a response that astonished Hollas: "Wow! Wouldn't that be absolutely incredible?"

Donald Jackson of Monmouth, Wales, was well-known to both men. Longtime scribe to Her Majesty Queen Elizabeth's Crown Office at the House of Lords, and considered one of the leading calligraphers in the Western world, Jackson had led calligraphy conferences at Saint John's over a 20-year span. A month earlier, Jackson had proposed the monumental undertaking to Hollas.

The Minnesota abbey and university, founded by German monks who migrated up the Mississippi to Minnesota in 1856, was a natural place for Jackson to present his lifelong dream. Benedictines have been copying and preserving manuscripts since Saint Benedict founded his first monastery in Italy in A.D. 529, a tradition alive and well at Saint John's today. The university houses more than 10,000 rare books, as well as the world's largest collection of medieval and Renaissance manuscripts on microfilm, some 90,000 in all.

Though aware that convincing both the university's board of regents and the monastic chapter of the abbey to agree to the project would be a daunting task, Reinhart and Abbot Timothy Kelly, leader of Saint John's 200 Benedictine monks, determined to forge ahead. It took years of debate, and some tough, backroom bargaining—but in 1998 both the university

and the abbey gave the plan their thumbs-up, provided the new Bible be "contemporary, ecumenical, multicultural and prophetic." What had once been a vision now had a name: The Saint John's Bible.

For Donald Jackson, it was a calligrapher's dream come true. It was in 1970 that Jackson first uttered aloud what he himself had known for years. As calligrapher to the Queen, during a trip to New York he was invited to appear on the "Today" show. When asked what his greatest wish in life would be, he responded immediately: "I would like to write the Bible." Though raised a Methodist, Jackson's desire stemmed not from religious intent. It was pure love of handwritten text. For Jackson, writing the Bible is what he calls a calligrapher's Sistine Chapel. "When a calligrapher puts his heart and soul into his work," he explains, "the words themselves have to be worth it. Perhaps more than any other text, the Bible has language into which you can pour great depth of feeling and it won't be misplaced."

His own words that day fell on barren soil. It was at Saint John's that the seed ultimately found fertile soil and took root, though two and a half years would pass between Jackson's lunch with Father Eric Hollas and the joyous news that the Bible project had been accepted. On September 13, 1998, Abbot Timothy and Brother Dietrich officially commissioned Jackson at a ceremony at Saint John's, during which both the calligrapher and his tools were blessed.

Another year and a half of intensive planning lay ahead before Jackson could actually begin. First he had to assemble a team to work with him in Wales, select his materials and create a new script that would pass the scrutiny of the monks. At the same time, a committee formed at Saint John's to decide how many volumes there would be (seven), which books would be in which volume, and how many illuminations there would be (160). The Bible will contain 1,150 pages, and measure two feet tall and close to three feet wide when opened. Then they had to estimate how much all this would cost ($3 million originally, now up to $4 million) and how they would raise the money.

The initial concept was to find a handful of generous donors. But when Brother Dietrich approached the first potential donor, the Frey family of Minneapolis, the process took a different turn. Recognizing the significance of the endeavor, and realizing there were undoubtedly countless people who would like to be involved in it, the family made Reinhart a counteroffer: a $500,000 challenge grant to be awarded only if it was matched by other donations.

Though still not turning away major backers, Saint John's made public a sponsorship plan that allows

Drawn from life, illustrator Tomlin's sketch of a cicada takes shape in a page margin. Other specimens at hand include prairie grass, a butterfly and a dragonfly.

individuals to purchase a single verse for any donation up to $1,000, larger sections for incremental amounts, or an entire volume for $250,000. "The response was overwhelming," reports Rob Culligan, a vice president of the university. "People from all over the country, even the world, *did* want to have a part in this Bible." (Sponsorship information is available at the project's official Website, www.saintjohnsbible.org, where progress on the work can be monitored as well.) Indeed, to date, public participation has been so overwhelming that Saint John's plans an eighth volume, "The Book of Honor," that will list all contributors and will be penned by a separate calligrapher.

Theologians at Saint John's also had to choose which Bible translation Jackson would use. "Though this is obviously a Christian Bible," states Father Michael Patella, chair of the Committee on Illuminations and Text, "we wanted to create a work of art that would appeal to people of faith the world over." The committee selected the New Revised Standard Version, for its contemporary translation, gender-inclusive language and wide use by Catholics and Protestants.

Illuminations and marginalia—decorations added in the margins, as was done in medieval manuscripts—would reflect current times."Though we are using medieval methods, we are not creating a medieval book," stresses Father Columba Stewart, a bibliophile with a keen intellect and dry wit who oversees Saint John's rare books collection. "We want this Bible to speak to what the church is today. Certainly there will be more emphasis in the illustrations on women in general than in earlier Bibles."

To anchor the Bible at its Minnesota roots, the monks and assistants began gathering and photographing flora and fauna from the 2,400-acre campus to send to the scriptorium in Wales. Thus the Bible may include colorful drawings of prairie grass, acorns, jack-in-the-pulpits, squirrels, sandhill cranes, even the unofficial state bird of Minnesota, the mosquito.

"Think of the scientific and technological changes that have occurred since the Bible was last handwritten and illuminated," marvels Jackson. "No one knew then about evolution, DNA, spaceflight or black holes. Certainly no one could imagine viewing an earthrise from the Moon. They thought the world was flat. There's so much for our imagination to play with in what we include, to make this a Bible that will give future generations an idea of what life was like in our time."

Because the monks at Saint John's couldn't afford Jackson's services indefinitely, and because they hoped the Bible could be ready for the 150th anniversary of the abbey, completion

The scribe's arsenal (above) includes quills, powdered pigments and watercolor cakes. At right, finishing touches are applied to an image of Earth as seen from space. Below right, Donald Jackson, employing an ancient technique, blows into a hollow reed, allowing condensation from his breath to help gold adhere to gesso.

was scheduled for 2006. Though the actual writing and illuminating would be done exactly as medieval monks did it more than a thousand years ago, Saint John's quickly realized it faced some 21st-century challenges.

"In medieval times," explains university fundraiser Rob Culligan, "if a monastery was going to produce a Bible, one of the monks would walk 40 miles or so down the valley to another abbey and ask if he could borrow a Bible for ten years. When he returned, the monks would unbind it and give the different sheets to different scribes to reproduce. A lot of these guys couldn't even read, though they did know how to precisely copy the alphabet in a given script. But the Bible we're producing is in English. There aren't any handwritten copies of those lying around

that we can borrow for Donald and his team to use as models."

Thus one of Jackson's first, and notably demanding, tasks was to develop a new script for a new Bible. "I wanted to draw on the rich medieval manuscript tradition," he notes, "so the script needed to be classic as well as contemporary. This is, after all, the Word of God; the seriousness of the words demand reverence."

The soft-spoken artist has always loved the handwritten word. He was born in 1938 in Leigh, England, a gritty city of coal mines and cotton mills where hard work took precedence over "sissy stuff" such as art or literature. Jackson, however, whose father owned a bicycle repair shop, was lucky. The headmaster at the school where he enrolled at the age of 5 was an accomplished calligrapher and artist. Sensing the boy's talent, the teacher encouraged him to study calligraphy in his spare time.

At 13, Jackson received a scholarship to attend art school. "It was everything I had ever hoped for," he recalls. "Four days of nothing but art and then one day when they crammed in all the academic subjects, plus football, which I skipped out on. It was bloody heaven for me." After completing art school at the age of 19, Jackson moved to London for postgraduate studies and taught art to teenagers at a secondary school in London's rough-and-tumble East End. It was there he met Mabel Morgan, a home economics teacher from Wales, whom he married in 1962.

Jackson soon realized that teaching youth was not his calling. It was calligraphy that he was born to do. He resigned his position and the security that went with it. Jackson plugged away, getting commissions to pen awards, invitations, diplomas. His work so stood out above others' that in 1964 he was chosen to be one of the Queen's two official scribes, a job that includes writing letters sent to each new peer of the realm.

Being the royal calligrapher, however, brought more prestige than pay. Thus, in 1969, Jackson gathered up his work, which included Shakespearean sonnets, pages of poetry, even an ornate map of Texas, borrowed airfare from his father and flew to New York.

Through calligraphy connections in New York, he did well. Three weeks later he had sold everything he had brought with him and garnered several new commissions. More trips to the United States followed, where he not only sold out his work but began lecturing to groups of established and would-be calligraphers. His was now

Inside a special shed, calligrapher Sally Teague, wearing a mask to protect against dust, sands down a sheet of vellum to create the perfect writing surface.

a name to be reckoned with in calligraphy circles.

Jackson drew from the depths of his experience as a world-class calligrapher as he considered the script he would use for the Saint John's Bible. He had to take into account that he was dealing with a different language than that of his medieval counterparts. "Because English is more staccato than Latin, its shorter words create a choppy effect," he explains. To compensate, and to make sure the calligraphy could hold its own against illuminations and decorations, Jackson designed his own script. That final script is a work of art in itself, beautiful to behold and easy to read.

There were more hurdles to cross before work could begin. If several calligraphers were to be trained by and work simultaneously with Jackson, which was the only way the Bible could be completed in time, they had to have a precise format to follow. They needed a word-by-word, line-by-line template of each volume, including spaces where the illuminations would go. Only then could one scribe begin working on one page while another worked on a different page, each knowing how many letters and words to fit onto each line and where to leave the proper space for the illuminations that would be added later.

Enter modern technology. Jackson recruited computer expert Vin Godier to work with him in a renovated machine shop where the wealthy Charles Rolls once tinkered with motorcars and aeroplanes at the turn of the 20th century. The grimy shop is now a clean, sunny scriptorium with drafting tables, a computer corner and a small addition containing tables, chairs and cooktop for the obligatory British tea breaks.

Under Jackson's direction, Godier searched for a computer font closest in size and style to the Jacksonian script. With that, he began producing a computer-generated layout of each book and volume, fitting the text into the allotted 1,150 pages while leaving spaces for the illuminations.

In a process that continues today, Godier prints the pages in the same size that the final handwritten pages will be, then sends them to Atlanta for scrutiny by proofreaders for the National Council of the Churches of Christ, which owns the copyright to the New Revised Standard Bible. When the printouts are returned, and then stamped with an angel to show they've been proofed, Godier makes corrections and Jackson distributes them to the scribes for copying.

On March 8, 2000—Ash Wednesday—Jackson chose his own first marks for the new Bible from the opening of the Gospel According to John. Dipping sharpened goose quills into vermilion and black ink, the master calligrapher took a deep breath. Then, with astonishing deftness and swift but sure strokes, he penned the words that seemed to thunder down through the ages as they took form on the page: "In the beginning was the Word, and the Word was with God, and the Word was God." He held his breath as each letter formed, then

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exhaled in relief. Donald Jackson had begun his life's dream—and the creation of a work of art that will last for generations to come.

As did medieval scribes, Jackson and his assistants work on vellum: calfskins that have been steeped in lime, scraped and sanded before they reach the scriptorium, where they get a final surface treatment to produce the perfect texture. "The ink needs to flow freely but not so freely that your pen slips and slides," explains Jackson. "We need a surface that grabs hold of the ink, so the mark we aim for is the mark we get."

It's not that mistakes aren't made. When that happens, the scribe scrapes away the error with a fine blade and then brushes the area with sandarac, a kind of tree resin, ground into powder. Catastrophe has struck only once: a hole was scratched during the correction process, requiring that a sheet of vellum be scrapped.

The work of the calligrapher is indeed painstakingly precise, requiring extraordinary patience and concentration. But to the calligraphers it is much more. Sally Teague, one of the scribes, reveals the magic of the art form. Now 49, Teague was a 30-year-old accountant and mother of four when she took a wrong turn in London's British

"Sometimes," says Sally Teague, "you become fully connected: eye, heart, pen and vellum."

Museum and stumbled upon her first medieval manuscript. "I made an instant connection with that manuscript," she recalls. "I fell in love; it's as simple as that."

Balancing parenting with studying, Teague ultimately graduated from calligraphy school. "My family could never understand that I could sit and make pages and pages of one letter," she chuckles. "But sometimes you find that piece of magic when you become fully connected: eye, heart, pen and vellum. You need to reach for that space, and it's a wonderful place to be when you find it—almost a form of meditation."

At the scriptorium this past fall, Brian Simpson, one of the calligraphers who works mainly from home, arrived with a rolled-up batch of completed pages. The group gathered around a large table in the tea room as the genial Simpson prepared to unroll the newly finished work from the book of Genesis.

The pages were breathtaking. The letters leaped off the vellum with a life of their own, perfection it seemed. Yet before Simpson returned to his home in the Midlands, 120 miles away, with a new supply of blank vellum, there would be close scrutiny and discussion by the team to make sure he wasn't developing any idiosyncrasies that strayed from the style. "Working as a team," explained Simpson, "we have to become an orchestra. There is no room for solos here.

"The first time I put a quill to a real page," he added, "I was terrified beyond all reason. It turned out to be fine, but I'm sure that page won't be my best one." He claims that he can look at completed pages and see where he struggled, when there was stress in his life, where the work flowed effortlessly. "It's an evolving process for us," he explained. "Someone will make an *e* in a slightly different way, and Donald might say, 'I like that.' Then we'll ease our styles into that *e*. I'm sure to the trained eye, the end of the Bible will look very different from the beginning."

Sue Hufton, a mother of two who also writes from her home, returning every five weeks to spend a few days

working alongside the other scribes, finds the greatest challenge is adapting her style to the Jacksonian script. "It's different than when I do my own calligraphy," she explains. "Even though I'm copying Donald's style as precisely as I can, how I write is different from how Donald writes because I'm not Donald. We can aim for consistency, but we're humans, not machines." For that reason, assignments have been made so that pages by different calligraphers won't appear side by side. But the slight differences in style will give the Bible a unique

Jackson and Teague study layouts of Gospels and Acts, visualizing the placement of illuminations and marginal decorative elements.

human quality that a printed text can never match.

No one can perform, or describe, the art of calligraphy with the eloquence of Donald Jackson, whose home, the Hendre—Welsh for winter pasture—nestles behind hedgerows directly across the lane from the scriptorium. Beyond the half-timbered house, sheep graze on green hills. About a dozen miles to the south, on the banks of the Wye River, rise the graceful ruins of Tintern Abbey, founded by an austere branch of Benedictine monks in the 12th century. It is a peaceful, and fitting, place to create a Bible for the new millennium.

Jackson himself is a complex, reflective man with pale blue eyes that at times seem to penetrate the depths of one's soul. At other times he seems distracted, as if he is choosing which of the dozen ideas racing through his mind he should pursue to its conclusion. "Calligraphy is a performance," he observed, catching hold of one of those thoughts. "It's like dancing or ice skating. You do a pirouette, or a figure eight, and you've got to do everything right at that precise moment or you'll fall down." And then there are the illuminations to consider, "a complex mix of the surreal and realistic," he says of his artistic style.

Despite the 4,000 miles that separate the scriptorium in Wales from Saint John's in Minnesota, the two halves of the team—the artists and the theologians—are in constant communication thanks to fax, e-mail and digital photograph attachments of the works in progress. On the Saint John's side of the ocean, a carefully chosen Committee on Illumination and Text (CIT) prepares a written theological "brief"

Jackson turns to tools and materials employed by scribes more than a thousand years ago.

for each of the passages that Jackson will illustrate. Each brief contains an explanation of the text, scriptural cross-references, free associations about the passage that come up during the group's brainstorming sessions, and a list of local references for Jackson to consider so that, according to a brief written for the Nativity, everything in the illumination will coincide with "historical, cultural, liturgical and archaeological data."

Completing a single brief is an intense process that takes three months of meeting several hours each week. When the group of eight—monks, sisters and laypeople who are also artists, medievalists, biblical scholars and art historians—have finally agreed on all the aspects they feel Jackson need be aware of for an illumination, they e-mail the results to Wales. Then, mission accomplished, they celebrate with a round of champagne and chocolates.

When Jackson receives a brief, he makes color sketches of the illustration in question that he then e-mails back to Saint John's. The CIT studies the sketches and returns comments electronically to Wales—a process that continues until the CIT gives the OK on theological content and emphasis. Jackson then begins work on what will be an actual hand-illustrated page in the finished Bible.

"It's another example of the marriage of the old and the new in this project," notes Patella. "We could never do this without computers and e-mail—unless Donald and his team pulled up stakes and moved to Minnesota for the next six years."

Though Jackson uses modern materials for his sketches, for the final illuminations he turns to the tools and materials employed by scribes more than a thousand years ago: quill pens, antique ink sticks, gold and silver. He paints in tempera, a technique in use before the advent of oil painting. To do so he grinds lapis lazuli for brilliant blues, vermilion for startling reds, malachite for glistening greens. To reds and other warm colors he adds the yolk of an egg, which serves as a binding agent and adds luster and depth to the pigments. Cooler colors get a dash of egg white for the same results. Fish glue, sugar and powdered white lead combine for gesso. Jackson applies the gesso and, when it has dried, breathes on it gently through a slender reed. This provides the moisture that will allow gold leaf to adhere so it can be burnished to a dazzling and lasting brilliance.

Each quill, whether from swan, turkey or goose, serves a distinct function.

For Jackson, however, there is far more than physical beauty in his creations. "I reach deep inside myself to make images that mean something to me, because then they will mean something to others. I want people to say 'Ah' when they look at the Saint John's Bible, not only because they are dazzled by the gold and vermilion, or awed by the calligraphy, but because they discover something inside themselves, something they may not have known was there."

Each member of the team working in Wales is aware of the immensity of the project. Most, however, say they take it a day at a time, page by page. "If you dwell too much on the idea that you're creating a work that will be here a thousand years from now," explains Jackson, "it would simply overwhelm you. What happens is, if you get a nice *a*, or you swing into a *y* and it works, you get a little thrill. Your feelings are never much farther than the next mark you make, not a thousand years in the future."

But the fact remains that not only are Donald Jackson and his team writing a Bible for the new millennium, they are doing it on a strict deadline—which does overwhelm them at times. (About eight to ten hours are required to complete a single page.) "We considered getting T-shirts printed that said, 'It seemed like a good idea at the time,'" jokes Jackson, who, bearing the ultimate responsibility for the physical creation of the 1,150 handwritten and hand-illuminated pages, concedes that at moments the burden seems almost crushing. "I ought to have known what I was taking on," he admits, "but I didn't."

When Donald Jackson penned his first deft stroke, it was a moment of living history. But the final stroke, that instant when the Saint John's Bible is complete, and ready for display at the university, will be even more momentous. The last word will be, appropriately, from the final verse of the last book in the Bible, the book of Revelation, which ends with a simple word: Amen.

Per Ola and Emily d'Aulaire wrote recently for SMITHSONIAN *on King Arthur Flour. Michael Freeman is based in England.*

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Shod for Snow

WHETHER THEY'RE STRAPPING ON TRADITIONAL OR HIGH-TECH FOOTGEAR, SNOWSHOERS ARE MUSHING INTO WINTER

By Richard Wolkomir ◆ Photographs by David McLain

I WAS SUPPOSED TO BE WORKING. But a monster snowstorm had just struck Georgia and the Carolinas, closed down Washington, D.C., then moved north to the Green Mountains of Vermont, where my wife and I live. From my home-office window, I could see pines mounded with white. I desultorily tapped computer keys. My mind wandered to the trappers of old, who braved every hazard out there, crossing trackless wastes. And, I seemed to recall, they did it all largely on snowshoes. . .

My curiosity piqued, I decided to delve into the matter. Snowshoeing, I soon learned, is now the fastest-growing winter sport. In a recent tally, from 1998 to 1999, the number of snowshoers increased 38 percent, from 2.9 million to 4 million. Internet sites list snowshoe trails and events, even in Manhattan's Central Park. Ski resorts now offer snowshoeing. And behind it all lies new technology.

To me, snowshoeing meant strapping on jumbo "tennis rackets" to galumph over drifts. Made of wood and rawhide, traditional snowshoes go back to prehistory. Since the late 1980s, however, new space-age snowshoes have all but taken over. These techno snowshoes are small, maneuverable, lightweight, with alu-

Bill Osgood, who wrote the book on snowshoes, displays a pair of his lightweight, aluminum-frame favorites.

minum frames, tough synthetic decks, engineered bindings.

Somewhere, I seemed to recall, hanging in our garage was a pair of old-style snowshoes, unused for decades. My wife, Joyce, had bought them, tried them and quickly abandoned them because everybody else was then swooshing along on cross-country skis. Also, I dimly remembered she had found the snowshoes unsatisfactory. But the concept of being a traditionalist appealed to me; I could tramp around outdoors, checking out our local pileated woodpeckers and otters. And, to savor the experience, I looked into snowshoeing's history. Snowshoes, I discovered, probably preceded skis. And in *The Snowshoe Book*, coauthors William Osgood and Leslie Hurley, both World War II Mountain Infantry veterans, said archaeologists believe the first such "foot-extender" for snow travel appeared about 6,000 years ago, in Central Asia.

In North America, aboriginal peoples relied on snowshoes. And Northern Indians were ace snowshoe engineers. Osgood and Hurley particularly cite the Athabascan, Algonquian and Iroquois for improvising hundreds of designs for all sorts of snow conditions. The Plains bison hunters also shuffled around on snowshoes.

George Catlin, an artist who documented Native American cultures of the West, largely during the 1830s, painted *Snowshoe Dance at the First Snowfall,* showing ten shirtless, snowshoe-wearing Ojibwa men dancing around two snowshoes suspended from a pole stuck in the snow. He wrote: "They sing a song of thanksgiving to the Great Spirit for sending them a return of snow, when they can run on their snow shoes in their valued hunts, and easily take the game for their food." Another of his paintings, *Sioux Indians on Snowshoes Lancing Buffalo*, shows a line of buffalo struggling through deep snow to the horizon, with braves spearing bogged-down bison. Each hunter wears snowshoes almost as long as he is tall.

Now I was pumped. Those old snowshoes of Joyce's hung in our garage, between the rake and the hoe. Our meadow lay untracked. Outside it was 8 degrees above zero. When I carried the snowshoes out of the dark garage, I could see that each consisted of a frame made of a white-ash strip, bent into a loop, the ends joined to form a tail. Two ash crossbars spanned the frame, one fore, one aft, for stiffening. Rawhide strips crisscrossed within the frame to form the webbing, a spiderweb of hexagons. A leather binding strapped the snowshoe to the boot.

These snowshoes, so big, felt as light as butterflies. And the thickly varnished rawhide was golden. Imprinted on each snowshoe were notices, "10 x 46-SO" and "Vermont Tubbs," as if they were numbered and signed etchings, works of art to walk on.

It was exhilarating to cross this white meadow, the winter sun pale behind clouds.

"I had a lot of trouble with those," Joyce said, sounding dubious. But I meant to stride through the snow, in touch with my inner Pleistocene guy. As I laced my left boot into the snowshoe binding, however, the decades-old rawhide lace snapped. Fixing it, my fingers froze. And, after a few steps through the snow, I remembered an old newsreel: an inventor walks on water, each foot encased in a big pontoon. He smiles gamely. But he looks like an idiot.

I, too, was waddling. Still, it was exhilarating to cross this white meadow, the winter sun pale behind clouds. Cottony snowflakes. Wind whooshing through firs. But my right boot wiggled out of its binding. Relacing it, my fingers refroze. A few steps farther on, my left boot slipped out, the heel strap loose. Rebuckling it, behind my heel, required a contortionist's twist.

Joyce watched me relacing the bindings every 30 feet or so. "That's exactly why I hung those up in the garage and switched to cross-country skis," she said. By the time I rounded the meadow, my fingers were numb from repeatedly retying rawhide laces. Back on our snow-covered lawn, as I trudged up a small hill, my right snowshoe's tail stepped on my left snowshoe's toe and I toppled.

I came up with a snowman's white face. I lugged the snowshoes back to the garage.

My eagerness to master snowshoes had historical precedent, I discovered. In the 1600s Indians in Quebec introduced French explorers and settlers to snowshoes. The French called them *raquettes*. And, according to Osgood and Hurley, the French almost won the French and Indian War, partly because of their raquette prowess. And "the English colonies, later to become the United States, made snowshoes part of their military forces' basic equipment," wrote Osgood and Hurley. "In the State Papers of Vermont, for example, there are several references to payments made to furnish the militia with snowshoes."

Explorers, settlers, trappers, buffalo hunters, surveyors, lumberjacks—all plodded westward on raquettes. In the 1800s immigrant Scandinavians introduced skis, and by the 1930s skiing was a big deal. But rural craftsmen kept the old snowshoe-making skills alive. In Quebec snowshoeing was so culturally rooted that parishes maintained snowshoe clubs, holdovers from early military snowshoe racing teams. Bill Osgood told me the clubs revolved around Quebec's churches: "On certain Sundays you'd go to mass, then you'd strap on your snowshoes and race." And the New England snowshoe hike was a tradition until the early 1930s, a community outing that featured cider, biscuits and oyster stew.

I had to give this another try. A forester, Paul Cate, invited me to snowshoe along through the woods. We would "cruise timber," estimating the size of the harvest and marking trees to chainsaw. "These are a good, general-purpose design, and they're in nice shape, but they need some varnish," he said, examining my snowshoes with a connoisseur's eye. "These leather bindings need treatment, and they're 'A style' bindings, which I don't like much—I'd think about new bindings." For today's timber cruise, Cate let me choose from his own four pairs of snowshoes.

I chose five-foot Alaskan Trappers, extra long and skinny, because they looked adventurous. Cate said they were designed for open-country cruising. Their size offers lots of "float" in deep snow but little maneuverability among trees. Their neoprene laces were better than my rawhides, but binding my boots was still a struggle.

It was about 10 degrees as we set out on a test trudge. All across the sunlit field snow crystals glittered. These bindings kept my boots in. But it was tough plodding in such huge snowshoes, especially when we took a turn

At home with his snowshoes, Vermont forester Paul Cate maintains an assortment of styles for use by his family.

"It's such a great feeling to know you can wander wherever you like."

through a woodlot. "Watch out for air pockets around trees, because you'll suddenly drop down," Cate told me. "If you do go in, try reaching back to grab the tails and lift up the backs of your snowshoes, so you can get out."

I switched to Westover modified bearpaw snowshoes. As I strapped them on—they were much smaller, with only a vestigial tail—Cate told me the original bearpaw was tailless and nearly round, designed for maneuvering in the woods. Modified bearpaws are a bit thinner and longer.

Cate's collection included a pair of the modern aluminum-framed techno snowshoes, belonging to his teenage son. "An artificial shoe," he said. I asked why he disliked them. "How can you teach an old dog new tricks?" he said. "I'm a woodsman, and I can't get excited about plastic and aluminum." He hoisted one of his son's shoes to show me it was a modified bearpaw design, with a rounded heel. "My problem with these bearpaws is that the back acts like a spoon throwing snow up on your legs," he said.

We wandered through the woods, Cate occasionally spray-painting a tree with a blue slash, to mark it for later cutting. Cate's beagle, Windy, gleefully raced in our tracks. "Don't worry about waddling," Cate told me. "It's all in your mind—just walk." He said Indians held on their snowshoes with just a toe cord. "So they had to know *how* to snowshoe, holding the shoe with the ball of their foot," he added. "Now, if you can walk, you can snowshoe."

Going down a steep hill, Cate demonstrated leaning back and lifting the snowshoes' toes to toboggan down. I ended up on my knees. Moments later, I stepped past a baby spruce poking from the snow and my left leg plunged in. Cate had warned me about such air holes. By the time I wriggled free, my feet were starting to freeze. I watched Cate forge ahead and heard him say: "It's such a great feeling to know you can wander wherever you like."

At least my boots now stayed in the bindings. And later, taking off the borrowed snowshoes, I reexamined the white-ash frames and intricately woven rawhide webbing, varnished to a rich amber. I wondered how they were made. Cate suggested I visit Armand and Marie Boutin, dairy farmers turned snowshoe makers.

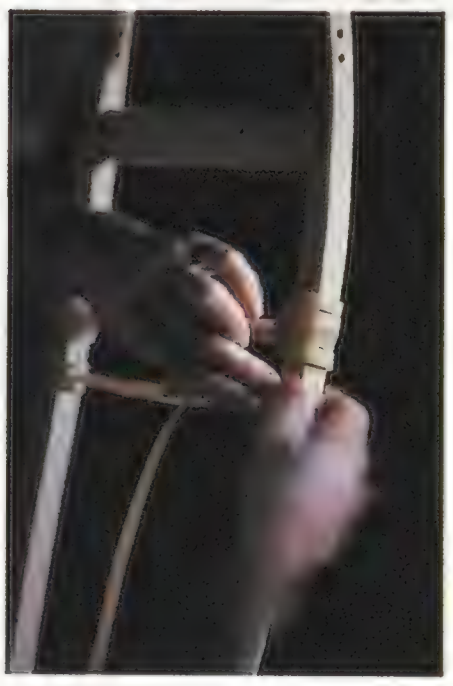
When Joyce and I did visit the Boutins' hilltop farmhouse-workshop, in Williamstown, Vermont, Marie told us that, one January day in 1989, they found an old pair of snowshoes on the farm, "belonging to somebody's grandfather," and she started using them. But the rawhide kept breaking. "So Armand studied the shoe's pattern, to see how it was laced," Marie said. Armand noticed cracks in the frames, and he decided to bend new frames. "So he cut a white-ash log—we cut our own firewood, anyway—and we had a sawmill that Armand and his brother ran off the tractor, so he could cut the right size strips from the log," Marie said. "He made a makeshift little steamer and tried steaming some of the sticks, and then he made a jig for bending them—this was in the winter when there wasn't so much to do anyway, except the chores."

She showed us that first pair of snowshoes they made, hanging on the wall of their workshop, which is the ground floor of their house. "We call that a Michigan, a shoe that is at least a foot wide and 48 inches long," Marie said. "At first we were just going to make a few for the family, but then we got carried away." Dairying was increasingly difficult economically. Maybe, the Boutins thought, snowshoes could earn them a few extra dollars. They found a tannery that would sell them a "side," the hide from one side of a cow, the hair and fat scraped off. "We took it out back and stuck it in a tubful of water to soften it," Marie said. "Through experimenting, we learned to leave it in just long enough, about four hours, so that it was pliable, but not too soggy and stretchy."

At her workbench, she showed us how she cuts a rawhide side into strips, using a device Armand designed and built. By adjusting the distance between a knife poking up from a metal table and an adjacent jig, she can cut a rawhide strip of the right width. And by cutting the hide in a spiral toward its center, she converts the entire hide into a continuous strip. "A single modified bearpaw snowshoe will have 82 feet of rawhide in it, and you don't want splicing," Marie said. From pegs on her workshop wall, rawhide strips hung like festoons of drying pasta. "Our first year we made 15 pairs and sold them to friends and to salespeople who'd come to the farm," Marie told us as she worked. "But once we figured out how to do all the aspects of it, we began making different models and sizes, and taking out little newspaper ads and selling them at fairs and sports shows, and also at farm shows, because maple sugarers still sometimes use snowshoes."

In July 1998 Armand and his brother sold off their cows, rented out their land and quit farming. Armand took a job at a cabinet shop. Marie makes snowshoes all day in their home workshop. When Armand comes home from work in the late afternoon, the Boutins work together on the snowshoes, producing about 120 pairs a year. They also repair old snowshoes, often U.S. Army models from World War II, sent in by their dedicated owners.

"Until I was 8, I lived in one of the valleys over there, and Marie was on the next knoll, but we didn't know each other then," Armand told us, as he demonstrated how he makes snowshoe frames. He slices a strip from an ash board, cuts the strip to length, tapers its ends and gouges out wood at the center point, where he will bend the strip to form a loop.



Past meets present (clockwise from top): At their workshop, where the Boutins craft traditional snowshoes, Armand bends a strip of white ash to make a frame; a frame is secured around a jig; rawhide strips are laced on. Meanwhile, at the Tubbs Snowshoes factory, aluminum tubes are shaped into state-of-the-art frames.

The new snowshoes grip better on ice because steel crampons bite into snow.

Before bending the long ash strip, however, he inserts it into a steamer he designed and built. After about two hours, he removes the steamed strip, bends it to shape on a jig, then returns it to the steamer for reheating, so he can bend up the toe. An upswept snowshoe toe will not dig into the snow. For two weeks, the frame dries. Then Armand attaches crosspieces to firm it, and sands the wood.

Marie showed us how she laces rawhide strips to the frame, creating the webbing. I could not follow her hands' moves, as she tugged rawhide, wove it, doubled back, tugged again. "It's the same way they've laced them forever, if you look at the old snowshoes," Marie said. Lacing a pair of snowshoes takes her three hours. After the rawhide dries, the Boutins coat the ash and rawhide with marine-grade spar varnish, for water resistance.

George Catlin's *Snowshoe Dance at the First Snowfall* (1835-37) depicts Ojibwa hunters wearing the winter footgear that will enable them to capture game more easily.

Because they have come to like snowshoeing so much, the Boutins sold their snowmobiles and now get out on foot. "It's good exercise," Armand told us. And Marie said: "People lead such hectic lives, and it's nice to go out in the woods—I love to look at the animal tracks, and see how the animals are living."

We asked them about the new high-tech snowshoes. "Where there's no trail, the high-tech shoes don't float you the way these do," Armand said. He shrugged: "A lot of people think the new shoes are all there are."

Later, I asked Bill Osgood his opinion of the newfangled models. "Oh, those new snowshoes are superb!" he said. "Because of their bindings, the snowshoe tracks exactly where your foot turns—as you turn your foot right, the snowshoe turns right, because it's bound so firmly to your boot." Also, he said, the new snowshoes grip better on slopes or ice because toothed steel crampons mounted underneath bite into snow.

"The old ones are good on flat going," Osgood said. "You know, the Native Americans mainly canoed down streams in the summer. In the winter they followed the same routes, snowshoeing along the flat ice, and they didn't like to go on hilltops much." I asked why some people still prefer ash-and-rawhide snowshoes. "Aesthetics, tradition, nostalgia for an earlier, simpler life," he said. At age 74, he snowshoes enthusiastically. "I use the new snowshoes," he told me. "The old ones—I just like to look at them."

Joyce and I visited the largest of today's approximately two-dozen snowshoe manufacturers, the Tubbs Snowshoe Company, in Stowe, Vermont. We wanted to learn about the aluminum and plastic revolution.

"We still make the old-style snowshoes, because some people prefer them," purchasing manager Bill Bruzzese said, as he led us to the factory's nook where Joan Scribner presided over a rawhide outpost. Leather "sides" waiting to be cut lay stacked on benches and rawhide strips hung on the walls. Scribner grew up on a nearby farm, where her father and grandfather repaired their own snowshoes: "My father didn't use snowshoes for fun—there were no tractors here in the 1940s, just horses: to run a maple sugar operation, and for trapping and farming, you used snowshoes.

"We turn out about 500 pairs of these a year," Scribner told us, as she wove rawhide. She showed us cards on which she has woven yarn in the intricate patterns of old snowshoe webbing, creating an archive of designs that would otherwise be lost.

In an adjacent workshop in the factory, David Darrah showed us the making of ash frames, much as Armand Boutin does it. If demand justified it, Scribner and Darrah told us, they would happily work on just the old-style

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Hard-core joggers have discovered they can run year-round—if they are fitted out with snowshoes.

snowshoes. As Darrah put it: "When I get done here, I can say—'Look! I made something!' "

Tubbs has made rawhide-laced snowshoes since 1906. Bill Bruzzese showed us antique models hanging on the reception-room wall. Here was a circa-1900 Army snowshoe made from wooden slats. "And this is a trapper style, for packing trail for your sled dogs," he told us. An old photograph of the original Tubbs factory, in Norway, Maine, showed the staff posing with snowshoes and other gear made for Adm. Richard E. Byrd. We could make out a sign in the photograph: "Sleds, Snow-Shoes, Skis, Ski-Moccasins, and Sno-Shu Chairs—Manufactured by the W. F. Tubbs Co of Norway, Maine, for the Byrd South Pole Expedition."

We checked out the factory's assembly lines for new-style snowshoes. Computerized machines bent aluminum tubes into frames. Other machines, in cookie-cutter style, punched decks out of sheets of tough synthetic fabric in orange, green, blue, red, yellow or maroon.

"Snowshoeing is really aerobic," Bill Bruzzese told us. He cited studies showing that snowshoers can burn up to 1,000 calories per hour. "That's like running at a six-minutes-per-mile pace," he said. He showed us ultralight, minimalist snowshoes for full-tilt snow running, designs configured for women and cub-size snowshoes for kids. He demonstrated bindings that rotate up or down at the toe, depending on the slope. He pointed out decking material so tough it should never rip or puncture, handles temperatures down to 40 degrees below zero, and is even 97 percent recyclable. "And these require no care at all, no varnishing, no treating the leather bindings—you just come in, knock the snow off and hang them up," he told us.

These did not look like the amber artifacts in our garage. They looked like footwear for Darth Vader. Still, we accepted Bruzzese's invitation to give them a try. Outside, in the snow beside the factory, he showed us how to slip them onto our boots: you snap a toggle, tug some nylon. Then we started to walk.

It felt like we were wearing hot rods on our feet. True, they provided less float than the larger wood-and-rawhide snowshoes hanging in our garage. But we still found ourselves striding gleefully through deep snow. We climbed up and down steep slopes as sure-footedly as mountain goats.

Not long afterward, at a sports store, we bought Darth Vader snowshoes of our own. It was a crisp afternoon; mounded snow avalanched from pines, and the unloaded branches sprang upward, like arms raised in a hallelujah. How long had it been since we had been out together in the winter? Frozen twigs scraping and chickadees were the only sounds. We saw footprints, a fox and a fisher, on missions. Red squirrels, coyote, snowshoe hare. We saw mystery tracks too. A lynx visiting from Quebec?

Near dark, as Joyce and I snowshoed home through spruces and hemlocks, I recited for her something my forester friend, Paul Cate, had told me. "Twenty-below is beautiful for snowshoes," he said. "You go out in the moonlight and you see the trees' shadows and the flying squirrels—it's a beauty most people never see!"

Richard Wolkomir wrote recently for Smithsonian *on MIT's Haptics Lab. Photographer David McLain is based in Portland, Maine.*

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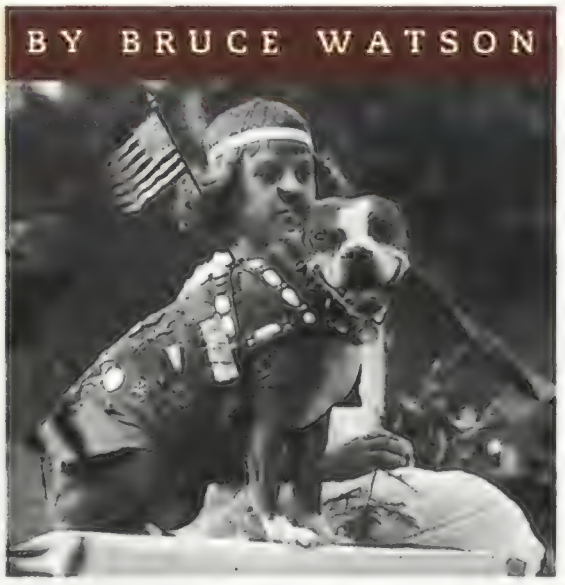
THERE'S A SPECIAL QUALITY IN SOME DOGS—CALL IT LOYALTY, HEROISM OR JUST PLAIN COURAGE—THAT COMES ALIVE UNDER FIRE

THE DOGS of WAR

BY BRUCE WATSON

EARLY IN JULY 1943, JUST BEFORE DAWN, Gen. George Patton's Seventh Army hit the beach in Sicily. Under a deafening naval bombardment, soldiers scrambled through waves and incoming fire to hug the sand. Operation Husky was the largest amphibious invasion of the war at that time. More than 160,000 troops went ashore. With them was a G.I. who could hear and smell things no ordinary soldier could detect. Although he was unarmed, his powerful jaws could crunch an enemy's bones. Some of his companions wondered what good he could possibly be against machine guns and tanks, but soon they would all be glad he was on their side. His name was Chips and he was a dog.



Months earlier, Chips had been living the good life in Pleasantville, New York. When his owner heard that dogs were doing their part to win the war, he enlisted Chips in the Army's new K-9 Corps. Upon completion of training, Chips landed in Morocco. Later, when Roosevelt met Churchill at Casablanca, Chips was among the security force. Then, during Operation Husky, he became a hero.

At 0420 on July 10, with the sky softening over Sicily's southern coast, Chips and his handler pushed inland from the beach. As man and dog approached a hut, it erupted with machine-gun fire. All human soldiers hit the ground, but Chips broke free and, trailing his leash, sprinted straight at the hut. Moments later, an Italian soldier staggered out with Chips tearing at his arms and throat. Behind him were several other soldiers, arms up. Chips' handler called him off and took the prisoners.

Chips had not come through unscathed. He had a small scalp wound. Powder burns on his coat suggested that the enemy had fired at him point-blank. But Chips had

Stubby (above) wore medals he earned during World War I at a 1921 parade in Washington, D.C. Marine canines (right) headed for action in the Solomon Islands with their handlers in 1943.

taken the nest. Later that day he helped his handler capture ten more prisoners. Soon he was being hailed across America. Unlike other military heroes, however, Chips showed no respect for rank. When Dwight Eisenhower tried to pet him, he nipped the general's hand.

"Cry 'Havoc!' and let slip the dogs of war," Shakespeare proclaimed in *Julius Caesar*. But long before the bard wrote his famous metaphor, real dogs had already gone to war. From battles fought with bow and arrow to those waged with laser-guided weapons, dogs have compiled a distinguished service record. In the fog of combat, some have turned tail. Hundreds more, armed only with keen smell and hearing, have been cut down by enemy fire. But to paraphrase Milton, they also serve who only stand and perk up their ears. Merely by "alerting" to the enemy, war dogs have saved thousands of lives.

The American military was late to learn this lesson, but more than 1,300 dogs now serve in the nation's armed forces. They guard military bases. They sniff out explosives. And they occupy a special place in the hearts of their handlers. When "Havoc!" has been cried, the dogs of war have demonstrated over and over again that they are a soldier's best friend.

Around 4,000 dogs served in Vietnam. Their duties included looking for signs of enemy activity (above) and accompanying troops helicoptered in and out of battle (right).

When Steve Mac Robbie became a dog handler during the Vietnam War, he didn't know he was joining a tradition as old as war itself. He just knew that he hated military police school and he loved dogs. So when an officer at MP school asked for dog handlers, Mac Robbie volunteered. "Everyone said, 'Don't do it, it's a short ticket to 'Nam,'" Mac Robbie remembers. "My hand was the only one to go up." In June 1969 Mac Robbie was sent "in country." There, after his first dog, Max, proved too old to patrol and his second one, Duke, chomped 15 holes in his arm, he paired up with Prince. More than 30 years later, seated in his home in Billerica, Massachusetts, the graying Mac Robbie shows me photograph after photograph of a sable-colored German shepherd. "Prince was my buddy," the gruff-voiced vet says. "Every free chance I had, I'd play with him. He was my main purpose for being there."

In Vietnam, U.S. soldiers had a saying: "The night belongs to Charlie," meaning the Vietcong. At night the VC played a deadly game of chicken around American bases, cutting fences, firing mortar rounds, keeping everyone on edge. From midnight to dawn, when a lonely 19-year-old draftee patrolled outside the perimeter of Tay Ninh base, the only thing between him and death was his dog. "Dogs are the best piece of equipment the Army ever invested in," Mac Robbie tells me. "They're always on duty. You could trust your life with them."

No one knows when dogs were first drafted. Assyrian temples in Iraq feature bas-reliefs of battle dogs. Egyptian hieroglyphics show soldiers with dogs on leashes. Unsung packs of dogs must have served before the first canine combat hero emerged from the Peloponnesian War. Sorter was one of 50 dogs placed by Corinthian soldiers on the coast near their citadel. One dark night the Greeks invaded. All human guards were asleep, but the dogs descended on the enemy, barking

AP/WIDE WORLD PHOTOS; HULTON-DEUTSCH COLLECTION/CORBIS; P. 100 UPI/CORBIS-BETTMANN; P.101 NATIONAL ARCHIVES

and snapping. Sorter, the sole survivor of the melee, ran through town waking the soldiers. After the Greeks were repelled, the grateful victors gave their hero a collar that read "Sorter, Defender and Savior of Corinth."

Many a dog lover must shudder to think of an innocent pooch on the front lines, and most dogs have no more taste for combat than most people. Yet there is *something* in *some* dogs—call it loyalty, ferocity or just plain courage—that comes alive under fire. When it does, even seasoned soldiers stand in awe. Napoleon's troops saw it at the Battle of Austerlitz, where a dog named Moustache showed them the canine brand of bravery. When an Austrian soldier killed the French flag bearer and tried to wrest the flag from the dead man's hands, Moustache leaped at the enemy's throat. The Austrian dropped the flagpole, which the dog then carried in his mouth across the battlefield. For his heroics Moustache was decorated by Napoleon's field marshal.

Citing such stories, dog lovers have often called for canines to get their marching orders. Benjamin Franklin recommended that dogs, "large, strong and fierce," be recruited to fight Indians, but none ever were. Those found among troops in the Civil War were mostly farm dogs brought by their owners. During World War I, Stateside kennel clubs lobbied for dogs in combat, yet when the Yanks arrived "over there," they were the only army fighting entirely on two legs. The Germans had deployed approximately 30,000 dogs, the French and British another 20,000. America's first canine war hero had to sneak into action.

During the summer of 1917, a stray bullterrier with a cropped tail infiltrated training of the Army's 102nd Infantry. Soldiers quickly named the dog Stubby, and when the 102nd shipped out, they smuggled Stubby aboard, pulling him through a porthole with a rope. After landing in France, Stubby kept the troops company,

refusing to flee despite relentless shelling. Then one night while sleeping in a trench, he snapped awake, gave a low growl and raced around a corner. Seconds later a voice cried out. Stubby's best friend, Cpl. Robert Conroy, grabbed his rifle and followed. There he saw Stubby with his teeth sunk into the hindquarters of a German spy. The spy was quickly disarmed, but Stubby held on until coaxed to let go.

After the story of his heroics spread, Stubby met President Woodrow Wilson and shook his hand, without nipping it. Gen. John Pershing awarded Stubby a medal, and later he was designated an honorary sergeant. Back home, the dog attended American Legion conventions and led parades. Stubby's final honor, such as it was, came after his death when he was stuffed, mounted and put in the Smithsonian's National Museum of American History. Today he is on display at the National Guard Armory in Hartford, Connecticut.

Dogs like Stubby are natural-born soldiers, but soldiers must be trained. Aaslan is not the type of dog I'd want for a pet, unless I lived in a combat zone. When I met him at Lackland Air Force Base in San Antonio, Texas, he was being auditioned for boot camp. One trainer held onto his leash while another came near, shouting and swinging a stick. The German shepherd snarled and strained at the leash. He passed that test, and others. When the "enemy" threw a bone nearby, Aaslan remained eager to attack. When allowed, he bit into a burlap sleeve with what handlers call a "hard, full mouth." Later he stood unfazed as a trainer approached firing a .38 revolver in the air. Checked out by vets, Aaslan showed no hip displacement or signs of being a "one man dog" who would obey only one handler. Two-thirds of the dogs who come to the 341st Training squadron

Chips, a hero in the invasion of Sicily, enjoyed a friendly pat on his way home.

at Lackland, the world's largest dog-training school, are rejected. But Aaslan made the cut.

Since 1978, all military working dogs have been trained at Lackland. More than 300 German and Dutch shepherds and Belgian Malinois live on the base, where they are used to train handlers and other dogs. Contrary to popular belief, K-9s are no longer trained to be ruthless killers. During Vietnam, sentries like Steve Mac Robbie's Prince were lethal weapons on a hair trigger. Some refused to let anyone near their handler, even when he had been shot. Others were too aggressive to work in teams. Today dogs are trained to be more disciplined. "In war, the enemy is armed—dogs aren't," says Stewart Hilliard, associate scientist of behavioral medicine with the Department of Defense. "So there's no sense in just training a dog to attack. Our training isn't primarily about biting people, it's about locating them. If a dog is too aggressive, it probably can't be trained. The modern war dog must be controllable even in a crowd."

Standing in an open field under the Texas sun, I watch Marine Sgt. Frank Mika "learning" his dog, and vice versa. Mika tells me he has spent six weeks teaching Remco various "phases of controlled aggression." On voice command or hand gesture, Remco will 1) escort his handler through enemy territory; 2) charge at an enemy; 3) sit quietly while his handler searches the enemy; and 4) attack without command if that enemy even touches his handler. Today Remco will show me another phase—the standoff. Across the field, some sucker of a private stalks Mika and his buddy. Held on a short leash, Remco "alerts," sitting rigid, ears erect. He can pant but must never bark, which might tip off an enemy platoon. Suddenly Mika shouts, "Git him, boy! Whooo!" Remco bolts across the field. But as soon as the dog attacks, Mika yells "Out!" and Remco returns to his handler. Remco has not been trained to go for the throat but for the limbs. Yet no matter how deeply his teeth are sunk into an arm, he must "out" when ordered. "Good out, Remco!" the dog hears after he releases the sleeve that keeps the poor private's arm in one piece.

Before shipping out, Remco will learn to search buildings and scout enemy territory, alerting at the slightest noise. And he will come to know that his handler is "top dog." "With these dogs, you have to be the alpha male," says Jimmy Thornton, a handler during Vietnam who now trains canines at Lackland. "We have dogs that are testing us all the time."

The Air Force currently trains dogs for the Army, Navy and Marines, along with dogs that will work at airports searching for explosives or drugs. Most are purchased from private kennels in Europe, and all are lifers. Having spent an average of $4,000 to buy a dog and $30,000 to train it, the military wants its money's worth. Once trained, each dog will serve up to ten years, then retire at Lackland. It may not compare with being someone's

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On patrol during World War I, a French soldier and his companion resembled Halloween tricksters. Special gas masks had to be designed to fit over dogs' snouts.

lapdog, but the war dog's life has changed since America's first official K-9s were enlisted by their owners during World War II.

On December 7, 1941, the U.S. military had just 90 dogs—sled dogs stationed in Alaska and Greenland. Not long after that, breeders and owners banded together to form a lobby group called Dogs for Defense, Inc. The Army's Quartermaster Corps asked the group to train 200 sentries to guard its supply depots. The *New York Times* mocked the idea, calling the new recruits "WAGS." Then some Army wag dreamed up the name K-9 Corps, and like all good soldiers, the corps got its own song.

From the kennels of the country,
From the homes and firesides, too;
We have joined the canine army,
Our nation's work to do . . .

During the war, patriotic owners donated more than 40,000 dogs, never

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SWING

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At least a few dogs parachuted into combat during World War II. A rigger checked out one dog's harness and chute at Lawson Field in Fort Benning, Georgia.

knowing if they would see them again. At first, almost any big dog would do. Recruits had to weigh between 55 and 85 pounds, stand 23 to 28 inches at the shoulder and be no more than 5 years old. More than 75 percent failed their preinduction physicals and were sent home with their tails between their legs. Those who passed received their own special "dog tag"—a number tattooed on the ear—and were shipped to boot camps, where they spent 14 weeks in training. The new soldiers came from 32 different breeds. Some of them lacked the proper spirit. During training, soldiers struggled to arouse one Irish setter named Ambrose. Even when they cracked a whip near him, he remained everyone's best friend. Finally, they sicced him on an "enemy." To their delight, he tracked the man down and knocked him over. Then he licked the enemy's cheek. Ambrose was given an honorable discharge. And eventually the ranks of accepted K-9 Corps breeds were narrowed to seven—German shepherds, Doberman pinschers, Belgian sheepdogs, collies, Siberian huskies, malamutes and Eskimo dogs.

By the summer of 1942, America's war dogs were ready. That June a Nazi submarine ran aground off Long Island. Saboteurs came ashore and were captured. Suddenly America's coasts seemed vulnerable. Soon, like the "Defender and Savior of Corinth," hundreds of dogs, called "coasties," were patrolling the Atlantic, Pacific and Gulf shores. Then, Secretary of War Harold Stimson ordered the military to use dogs as messengers and scouts, and on search-and-rescue patrols. The following summer, while Chips was preparing to storm the sands of Sicily, the First Marine War Dog Platoon shipped out of San Diego bound for the Pacific theater.

On the morning of November 1, 1943, gusting winds whipped the palm trees of Bougainville in the Solomon Islands. High surf tossed American landing craft like corks as 12,524 soldiers and 36 dogs invaded. In a driving rain, Japanese and American planes dueled above the beach. Enemy machine guns opened up, and the dogs went to work. Patrolling inland through snake-infested swamps, the dogs were deployed in pairs. One walked at the front, the other at the rear of an advancing column. To send messages, one vet remembered, handlers pinned them on a collar, shouted "Report!" and the dog was "off like a gunshot."

Andy, of the Doberman breed the Marines called "devil dogs," was working off-leash 25 yards ahead of M

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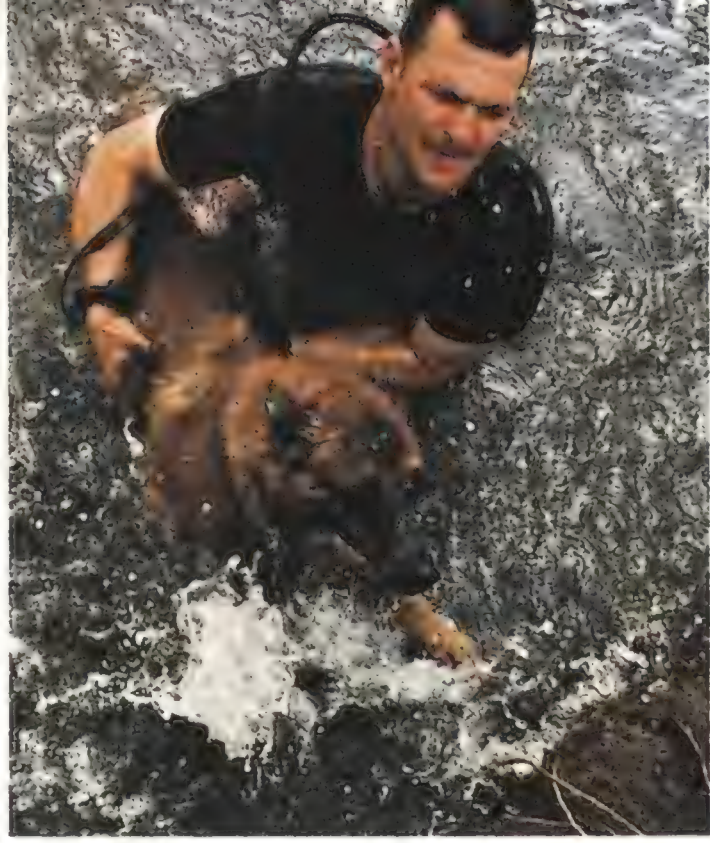

At Lackland Air Force Base in Texas, dogs are trained to attack in one situation (below) and restrained in another (far right). Veteran dogs are used as "teachers" to show student handlers how to negotiate in water with a canine companion (right).

Company. Whenever he advanced too far, his handler clucked softly to get his attention, then motioned him back with a hand. Andy loped along, enjoying the game. Then he stopped. The short hairs on his back bristled, alerting the soldiers to the presence of the enemy. Three times Andy alerted that day, each time saving his squad from an ambush.

Dogs were no more at home in the tropics than G.I.'s. Their feet swelled in the heat and were bloodied by coral reefs. Many succumbed to heartworm or heat exhaustion. Some were driven mad by the constant shelling, and others, confused in combat, turned on their handlers and had to be killed. Still, officers were pleased with this new weapon. It could carry a message through thick jungle twice as fast as a man. In favorable winds, it could alert to danger 1,000 yards away. And once alerted, a handler could pinpoint the enemy by looking between his dog's ears, using its nose as a pointer.

On New Britain, dogs accompanied 48 patrols in 53 days, helping their handlers capture or kill 200 of the enemy. They also served sentry duty at night. A special bond developed. Soldiers slept beside their dogs and carried them over treacherous coral. Such affection soon led to a change in policy. Because dogs were most effective when teamed with soldiers they loved, handlers usually stayed with the same dog from training to the front. And as the front advanced, dogs served in nearly every major campaign in the Pacific.

Americans trained more than 10,000 dogs during the war. They parachuted into France, hauled ammunition through the snow, carried messages through enemy lines and traversed suspected mine fields ahead of soldiers. Yet when they came home, they didn't get a hero's welcome. After a brief retraining, they simply went back to their doghouses. Even Chips had to settle for a pat on the head. Weary from battle, he returned to his owner after the war ended, and died shortly thereafter.

At least Chips came home. In Vietnam, hundreds of military dogs ended up missing in action. Steve Mac Robbie has plenty of pictures of Prince, but he would trade them all to find out what happened to his partner. During their eight months in Vietnam together, Prince and Mac Robbie did not take any prisoners. They did not lead any lifesaving missions. Like so many military tours, theirs featured hours of boredom punctuated by moments of terror. The Tay Ninh base they were assigned to, near the Ho Chi Minh Trail, was a hot spot. Many nights Prince alerted to VC infiltrators, and Mac Robbie radioed his reports. Sometimes a helicopter gunship flew over and fired into the darkness. More often, the danger disappeared, leaving a soldier and his dog alone with their thoughts. One night Prince gave a different alert, his ears back instead of forward. Seconds later, from just yards away, the growl of what sounded like a big cat tore through the night. Without Prince, Mac Robbie might have been mauled.

Mac Robbie says he doesn't remember saying good-bye to Prince. "I've blocked it out of my mind," he tells me, fighting tears. "It was the toughest thing I ever had to do." Mac Robbie came home and lost track of Prince. But Prince probably didn't make it home. Nor, chances are, did John Flannelly's dog, Bruiser.

In September 1969 Flannelly and Bruiser were leading a patrol 12 miles south of Da Nang. Suddenly the German shepherd stopped. His ears went up. Flannelly fired and then "all hell broke loose," he remembered. Flannelly went down, his chest ripped open so he could see one lung. He told Bruiser to leave, to get out of danger, but the dog stayed, tugging at his handler's shirt. Flannelly reached up, grabbing Bruiser's harness, and the dog began to drag his master to safety. Taken to the nearest hospital, Flannelly refused to be transferred for better care until he saw his dog.

WILL VAN OVERBEEK (3)

One afternoon, Bruiser came. Flannelly, who now lives in Lynn, Massachusetts, recalls, "I never saw him coming, I was in such a daze from the medication. He crawled up from the bottom of the bed and put his head in my face. I was so happy to see him, I just hugged him and cried."

Thanks to his dog, Flannelly came home. No one is sure what ultimately happened to Bruiser or to many of the several thousand other canines that served in Vietnam. Some ex-handlers and other military men believe that, after preventing an estimated 10,000 casualties, many of the dogs were essentially abandoned. Tom Mitchell, chairman of the California-based Vietnam Dog Handlers Association (VDHA), says hundreds were sent on to further military assignments elsewhere after completing their Vietnam duties. Perhaps a thousand were turned over to the Vietnamese, a fact some veterans equate with abandonment or a death sentence in a country where dogs were not infrequently eaten for dinner. Still others died from disease, and others were euthanized. Nearly 300 were killed in action, according to Mitchell, and around 200 were returned to this country.

Over the years a few memorials have been erected to honor K-9s. But since the establishment of the War Dog Memorial Fund in March 1999, two impressive new monuments have been created. Last Presidents' Day about 100 veterans gathered in Riverside, California. Many brought their current dogs, others just photographs of old friends. They had come to help dedicate a memorial adjacent to the March Field Air Museum. Amid tearful speeches, an 18-foot statue of a German shepherd and his handler was unveiled. Beneath the dog and soldier are these words: They Protected Us on the Field of Battle / They Watch Over our Eternal Rest / We are Grateful. The War Dog Memorial Fund also raised money to build another new memorial dedicated in October at the Infantry Museum at Fort Benning, Georgia.

This year, the House of Representatives and the Senate acknowledged the contributions military dogs have made when they approved legislation allowing the animals to be adopted by their handlers or other qualified persons. Adoptions have not been permitted since the 1940s. Of course the enactment requires a Presidential signature before it becomes law.

Maybe the most fitting memorials are the scrapbooks kept on shelves, the pictures hung on walls and the stories of heroism soldiers share. "Don't mention me in your article," one ex-Marine told me after speaking about his tour in Vietnam. "Mention my dog, Tiger. He was my hero. All the dogs were my heroes."

Bruce Watson wrote about baseball czar Kenesaw Mountain Landis in October.

Architect Wayne McAllister's 1949 Toluca Lake Bob's Big Boy—the oldest still standing—was designated a California State Point of Historical Interest in 1993 thanks to the tireless efforts of the Modern Committee.

Out from under the **WREC**

THE LOS ANGELES CONSERVANCY'S MODERN COMMITTEE FIGHTS TO RESCUE REMNANTS OF 1950S "GOOGIE" ARCHITECTURE AND OTHER 20TH-CENTURY LANDMARKS

BALL

LIKE WORSHIPERS UPON CALVARY, they have gathered for a vigil on this congested stretch of old Route 66 in Arcadia. In the too-crisp blue of a Southern California Sunday morning, the imperiled symbol of their faith casts them into shadow: a mammoth, motionless, ornamental windmill towering atop a Denny's restaurant, soon to be closed for remodeling.

Theirs isn't exactly a mute vigil. Commandeered as the worshipers' own retro theme song, "The Windmills of Your Mind" pipes from a portable stereo. Truckers, housewives and day laborers blast their horns in response to the brazen varsity-style cheering and "Honk Your Horn if you love the windmill" placards that greet them as they pass by.

BY ED LEIBOWITZ

PHOTOGRAPHS BY MARSHALL LAPLANTE

Temporarily confined to a wheelchair after a recent roller-disco mishap, Chris Nichols appears chipper enough in his blue guayabera shirt, blocky glasses and goatee. He and his cohorts have labored mightily on this media event. A relentless fax campaign blanketing much of greater Los Angeles has attracted several television networks and a swarm of newspaper reporters. They, too, now mingle at the foot of the windmill, which is an architectural relic from this restaurant's former existence as part of the Van de Kamp's coffee-shop chain.

At 28, Nichols can count himself a hardened veteran of the fight for Southern California's postwar coffee shops. While more traditional forces in the L.A. Conservancy, Los Angeles' leading preservation organization, have battled to save such endangered treasures as St. Vibiana's Cathedral and the city's Central Library, Nichols has launched more improbable crusades. As a chief strategist for the Conservancy's Modern Committee—the eclectic preservation outfit more affectionately known as Modcom—he has struggled to save cantilevered car washes, parabolic bowling palaces and rocket-era hamburger stands, along with high-modern residences and grand civic buildings.

Given his thick résumé in preservation theater, Nichols could kick himself for failing to capitalize on the windmill's rich quixotic implications. "At the last moment, I thought, 'Why didn't we invite Robert Goulet?'" Nichols sighs. "He's in town performing *Man of La Mancha* right now!"

Modcom colleague Charles Phoenix manages a mock arching of the eyebrows. "You think he'd have joined us?"

"Oh, yeah," Nichols shoots back. "He would have sung 'Impossible Dream' right at the curb."

Despite the telegenic allure of these Modcommers in full protest mode, a few of the reporters are more than skeptical. "Does this make any difference in our lives or anyone else's life?" one broadcaster asks Phoenix, thrusting a microphone under his chin.

"It shouldn't really be up to people today to get rid of everything from this era," replies Phoenix. "And this example is particularly significant because it's so novel. It's space-age coffee-shop architecture of the 1960s, topped by the old-world charm of the windmill."

Modcom propaganda swirling above his wheelchair—"It's a wind-wind situation," "DON'T BREAK the WINDmill," "Where there's a mill, there's a way"—Nichols is busy certifying this coffee shop's "sole survivor" status. "There are beheaded ones," he concedes to one reporter, "there are partial ones and there are ruins. But there's not a complete one with every piece checked off the list like this."

"Don't kill . . . the windmill! Don't kill . . . the windmill!" The deep chant reverberates against the asphalt. Modcom chairman Michael Palumbo, though weighed down by a "Save the Windmill" sandwich board, exudes nothing but confidence to the media. "We haven't heard from Denny's yet," he concedes, "but I anticipate—I anticipate!—a response from them."

An animated neon sign hovers over the palms at Pann's, a popular Modcom hangout. The "futuristic" coffee shop was built in 1958.

Privately, Nichols and Phoenix aren't so sanguine. They worry that Denny's parent company, in its attempt to remake its eateries into retro-1950s Denny's diners, may be threatening vintage coffee-shop architecture throughout Los Angeles. Modcom's recent strategy sessions have been full of frantic talk about the perils of what they call Denny's "dinerization." But all the letter writing, community outreach, political pleas, celebrity appeals, newspaper ads and bravura street demonstrations can only get them so far. Forty years ago, Phoenix and Nichols point out, they might have been able to sway Denny's when it was still a local California roadside stand called Danny's Donuts. But today's national restaurant conglomerate is based in Spartanburg, South Carolina. "The fact that they're out of state is making things harder," Nichols laments. "There's no local pride."

"The demolition permit has already been issued by the

city," Phoenix adds. "And Denny's is such a huge corporation that to get through to the top web of the powers that be is next to impossible."

The next morning, Modcom is staring incredulously at victory—albeit a Pyrrhic one. The windmill has been saved, but Denny's will still graft an incongruous stainless-steel diner door with a big glass *D* onto the restaurant's front entrance. Inside, the soaring conical roof and subtle "Dutch Masters" tans and browns will be scrapped for the lowered acoustic-tile ceiling and wild purple-and-red color scheme of Denny's revamped design.

But, above the roofline, the victim has been spared its beheading. "The windmill was like a billboard," Phoenix explains. "It's an instantly recognizable symbol." The Van de Kamp's coffee-shop chain may be defunct, but the windmill will endure as a symbol of Modcom's no-longer-so-quixotic notion that the roadside commercial strip of the 1950s and '60s somehow deserves to survive.

The wrecking ball, or threat of it, has served as the greatest galvanizer for preservationists in America. The 1963 demise of the old Penn Station spawned the preservation movement in New York City as surely as the destruction of Louis Sullivan's Stock Exchange Building mobilized Chicago a decade later.

The Los Angeles Conservancy, founded in 1978, had less tragic origins. It succeeded in rescuing the Spanish-Deco Central Library, whose near-demolition brought the organization into existence. Alas, Modcom, christened the "Fifties Task Force" when it was formed in 1984, was set in motion too late to save its own prime mover—Ship's Coffee Shop in Westwood, California. An unhinged celebration of the early space age, the building was torn down that year to make room for a high-rise.

When preservationists set out to save a Beaux Arts, Victorian or Art Deco landmark, they can usually rely on whole faculties of architecture professors ready to testify to the building's timeless worth. But the 50-odd Modcommers often fight for roadside attractions traditionally scorned by the architectural establishment. On those occasions when they weren't ignored altogether, the Modcommers' endangered commercial landmarks were dismissed as "Googie" architecture, named after a long-demolished Los Angeles restaurant whose mascot was a cartoon waitress with fried eggs for eyes. In his book-cum-Modcom-bible, *Googie: Fifties Coffee Shop Architecture*, historian and critic Alan Hess defines the term Googie as an architectural catcall for buildings deemed "a little too flamboyant, a little too western, and a little too American for serious consideration."

While film producers and new-media barons now enter bidding wars for high-modern minimalist homes by such architects as Richard Neutra and Pierre Koenig, many critics still take offense at the coffee shops, budget motels and drive-in theaters built during the same postwar era. Those boomerang roofs. Those winking, waving neon mascots. Those kaleidoscopic color schemes. Here was an architecture that knew no restraint, that groveled for attention and grabbed for the lapels.

Philadelphia architect and former Yale professor Denise Scott Brown can recall her own early Googie misgivings. "When I was a snobby little student entering architecture school, I hated it too," she says. "The cheapness of it. Although it had something in common with modern architecture, it had all these exaggerated curves and flashes. Of course, that style has come back now within a certain chic set. Designer Phillipe Starck, for instance, has

It's an architecture that knew no restraint, groveled for attention and grabbed for the lapels.

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WHERE THERE'S A MILL THERE'S A WAY!
When the Windmill Spins Everybody Wins
WE'D BE GONE
TAKE A SPIN ON ROUTE 66
SAVE THE WINDMILL
HONK YOUR HORN if you ♥ the Windmill
DON'T BREAK the WINDmill...
SPEED LIMIT 35

It's a "wind-wind situation," as Modcom takes to the street to save a former Van de Kamp's coffee shop turned Denny's on Route 66.

based his furniture on Googie." Scott Brown herself can claim an outsized role in Googie's journey toward legitimization. Thirty-two years ago, with her partner Robert Venturi and graduate assistant Steven Izenour, Scott Brown deployed a platoon of Yale architecture students across the Vegas strip to make a serious appraisal of neon-drenched casinos and cracker-box motels. The result was the seminal 1972 Venturi-Scott Brown-Izenour reassessment, *Learning from Las Vegas*. "These boxes and billboards will be seen as very high examples of folk art," she says now. "They need to be considered in the same way we view country quilts."

In the past, Modcom has found such goodwill in short supply. It was, for instance, only over the bitter opposition of the property owner and the dismissive testimony of a visiting University of Southern California architecture professor that they won California State Point of Historical Interest status in 1993 for an endangered 1949 Bob's Big Boy in Toluca Lake. That they managed to rescue the 1953 Downey McDonald's, the nation's oldest surviving McDonald's, against the initial wishes of the McDonald's Corporation itself, is a testament to their inexhaustible reserves of energy and penchant for the grand media gesture.

A little too flamboyant, a little too western, a little too American for serious consideration. Explaining Googie, Hess might almost be describing the Modcommers themselves. Although part of the more buttoned-down L.A. Conservancy, Modcom attracts a volunteer membership as youthfully ironic and far removed from the stodgy reserve of traditional preservation groups as a 1960s windmill coffee shop is from an 18th-century New England customhouse.

IN THE BOARDROOM OF THE HOLLYWOOD FOREVER CEMETERY, the monthly Modcom meeting has come to a fragile order. Silencing the hipster chatter with pounds from his gavel, chairman Michael Palumbo delivers an update on the Denny's dinerization crisis. "We established contact with the corporation," Palumbo reports. "The trouble is, they're not really interested in meeting with us."

Scattered among the 50 attendees, and more vocal than the rest, are a core of Modcom's stalwarts. Over many seasons of struggle, these dozen Googie activists have congealed into a family. They have their tiffs and favorite tiki bars, birthday parties and weddings, victory celebrations, and wakes for structures they tried in vain to save. They will spend weeks, months, even years, fighting to rescue a retro supermarket, a multicolored neon beacon above a liquor store, or some other endangered holdout that is more a fixture of their parents' youth than of their own.

Charles Phoenix has narrated a campy mid-century travelogue he calls "God Bless Americana," featuring color

A little too flamboyant,
a little too western,
a little too American
for serious consideration.

slides he purchased at garage sales. He has also recently coauthored coffee-table books on 1950s Hawaii and 1950s Vegas. John English, another regular, has risked life and limb removing neon signs from condemned movie theaters and has launched a local sight-seeing operation called Googie Tours. When membership chairperson Gretchen Spence appeared on "Greed," the game-show clone of "Who Wants to Be a Millionaire," she fantasized neither about a Jacuzzi overflowing with Dom Perignon nor a buying spree at Versace. "I've had my eye on a historic theater on Route 66," she told host Chuck Woolery. "I'd buy the theater, rehabilitate it, have a big party. . . and save it from destruction!"

But it is Chris Nichols, the outreach chairman, who is the glue that holds Modcom together. Currently the media manager for an Internet celebrity photography venture, Nichols devoured Hess' *Googie* book at age 14. Soon after, he turned his attention to his local red-and-white McDonald's, pleading its case to the town's mayor and lobbying the daughter of one of the Three Stooges to reopen it as a theme restaurant. Although he lost that battle to the bulldozer, his research and tactics were later used in Modcom's Downey McDonald's crusade.

At the meeting, Nichols waves before him a vital document. "Here's a list of bowling alleys that were acquired by the AMF Corporation recently," he announces. "As you know, AMF takes down all the neon signage, and puts up a little square box with their logo." Nichols' commercial agenda segues from bowling alleys to an endangered Chevrolet dealership to the Greyhound sign above the condemned Hollywood bus station. He ends with yet another Googie mergers-and-acquisitions alert. "The Lucky supermarket chain is now Albertson's," he warns. "So photograph your Luckys before they all disappear."

After Modcom's blitzkrieg-style campaign, Denny's incorporated the 1967 Van de Kamp's windmill into the redesign of its Arcadia restaurant, seen here through a fish-eye lens.

NEXT TO THE WORLD'S OLDEST SURVIVING MCDONALD'S in Downey, California, Speedee the Chef makes his mad neon dash through the night sky. The company's original fast-food mascot, Speedee runs headlong toward a future where he'll be outpaced by Ronald McDonald and where the red-and-white tile stand with the parabolic arches he points to will be forsaken for earth-toned brick and a mansard roof.

As former Modcom chairman Peter Moruzzi explains it, the dull uniformity of today's roadside buildings represents the triumph of the focus group over the instincts of the small entrepreneur. "You don't see those mavericks who used to start these businesses anymore," he says. "Think about it. All these national chains—McDonald's, Big Boy, Denny's—were started by visionaries. They were willing to push the boundaries of design. Now they're all corporations." Moruzzi, who works for a software company, faced this when he began researching his first love, the American motel—the quintessential mom-and-pop business. "They all had personality, individual signs," he says, "like the ones around Disneyland—the Kona Kai, the Swiss Chalet. It was wonderful. They had such character. That's what architecture should be all about."

He finds occasional relief from the monotony when he rolls into some half-forgotten hamlet that modernity has passed by. "The dental offices in a small town," he says. "Flower shops that go on for 50 years, never changing."

Moruzzi's Silver Lake home also seems frozen in post-war amber. His television console is a 1950s Sylvania Syloette, its screen surrounded by a fluorescent tube called

The fight brought the phrase "junk food can be history" to the front page of the New York Times.

the HaloLight. His rumpus room tiki bar, with its thatch roof and near-mint collection of pagan-god mugs, is an urban archaeological marvel cobbled together from demolished Polynesian restaurants. With his narrow spectacles and well-clipped mustache, reminiscent of an East German spymaster, the 39-year-old Moruzzi appears right at home amid these Cold War-era surroundings.

Whether it's Rite Aid prying off the retro script of a former Thrifty's drugstore, or Washington Mutual swallowing Home Savings of America and jeopardizing bank branches adorned with mosaics by California artist Millard Sheets, the mergers of the past decade have not been kind to Googie architecture. "Once a structure is passed on to new owners," Moruzzi says, "it seems that the history of the building disappears."

In Downey, California, Speedee the Chef, the original mascot of McDonald's, lights up the sky above America's oldest remaining Golden Arches.

Take Modcom's crusade to save the Downey McDonald's, which Moruzzi himself led. In 1990 the hamburger stand was still in the same pristine condition as when it first opened in 1953. But no sooner had the original franchisees sold out to the McDonald's Corporation than the new owner bemoaned the eatery's lack of a drive-through window and indoor seating. McDonald's even branded it a $50,000-a-year loser. When the 1994 Northridge earthquake struck, a sign proclaiming "Closed Due To Earthquake Damage" was plastered across the plate-glass storefront. Yet the building appeared intact.

A tossed salad of constructive engagement, political and media appeals and on-site melodrama, the Downey McDonald's fight brought Chris Nichols' proclamation that "junk food can be history" to the front page of the *New York Times*. In the Downey parking lot, Modcom staged a "McFuneral"—a McAssassination attempt really—in which Nichols, decked out as Speedee the Chef, ran for his life as Ronald McDonald, who looked suspiciously like Modcommer John English, pursued him with a plastic knife. In October of 1996, McDonald's had a change of heart, and in press releases that betrayed no bitterness, the corporation and the L.A. Conservancy basked in mutual praise.

The Downey McDonald's and Toluca Lake Bob's Big Boy survive. But Moruzzi stills mourns "the mostly small anonymous stuff" that goes. "Stuff that there's no way you would have the energy or the time to try to save," he says. "But you see, it's the fabric that makes up the community, all those component parts. And those parts are disappearing, one after another."

IN THE CITY'S LAST REMAINING 1950S COFFEE shops, you can often get a glimpse of them, debating, lecturing, sounding the preservationist's alarm over cheeseburgers or hot open-faced turkey sandwiches. One evening, they might materialize just northeast of the L.A. airport in the cavemanlike grottoes of Pann's restaurant, a Googie-era triumph by master builders Armét and Davis. A few nights later, in the shadow of the city's Metropolitan Detention Center, they might be seen wolfing down pie and coffee in the decaying space-age restaurant they've nicknamed Jail Denny's. In their nerd glasses, gingham dresses and ancient cardigans, the Modcommers cling to these dwindling cathedrals of terrazzo and stone, like the astronauts of 1950s science fiction once clung to the mother ship.

Snapshot #1: Hip to hip in the circular booth, a group of Modcommers crowd around 92-year-old Wayne McAllister. The clanking of ketchup-smudged dishes, the squeals of toddlers trailing balloons, the greasy stench of hamburgers—for the awestruck preservationists, the entire sen-

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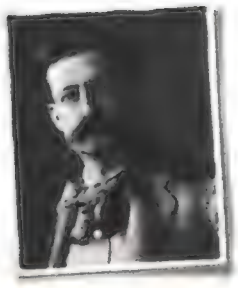

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If not for these Modcom acolytes, this Bob's Big Boy would have been scattered around a few landfills.

sory symphony of the Toluca Lake Bob's Big Boy recedes in the presence of the architect. In 1949 McAllister designed the fantastic crescent of concrete and glass that envelops them and transforms Riverside Drive outside into a kind of nocturnal aquarium—the SUVs and Cadillacs slithering by like oblivious fish.

Though heavy pouches now hang beneath McAllister's eyes, his six-foot frame is hardly stooped; and his high forehead, graced by a halo of thinning white hair, bears few wrinkles. Clearly, the Modcommers can still sense traces of the handsome San Diego teenager whose guidance counselor advised him to pursue acting or architecture, and who chose the latter, for the greater glory of the roadside landscape.

Modcom stalwarts convene in a 1953 Packard. Clockwise from top right: Peter Moruzzi, Charlene Gould, Alan Leib, Chris Nichols, Gretchen Spence and Charles Phoenix.

If not for Moruzzi, Nichols and other Modcom acolytes sitting at the table, this Bob's Big Boy, the third ever built, would have been scattered around a few landfills to make way for an office building. Although its owner once called it an eyesore, he has since come to treasure what he has helped to make the most profitable Big Boy in America.

Charlene Gould, Nichols' girlfriend and fellow Googie preservationist, gives McAllister an update on the radical remodeling, currently in progress, of the Santa Anita racetrack. Although outside the Modcommer's usual domain, the 1930s arena is one of their more pressing concerns. Already, two towering additions have been pushed up against its elegant facade. The Canadian owner has further plans to impose a Vegas-glitz-meets-Wild-West-rodeo theme on the graceful Art Deco structure, spurring its inclusion on this year's National Trust for Historic Preservation's 11 Most Endangered Places list.

McAllister himself had an architectural hand in another of the Trust's "Most Endangered" designees: Reno's 1947 Art Deco-style Mapes Hotel, which is now slated for demolition. The first high-rise in Nevada to combine gambling, dining, hotel rooms and entertainment, the Mapes was where Montgomery Clift and Marilyn Monroe bunked down while filming their movie *The Misfits*. In the early 1950s McAllister, who also designed the Las Vegas Sands Hotel and the El Rancho Vegas, reconfigured the Mapes casino and remodeled its top-floor Sky Room.

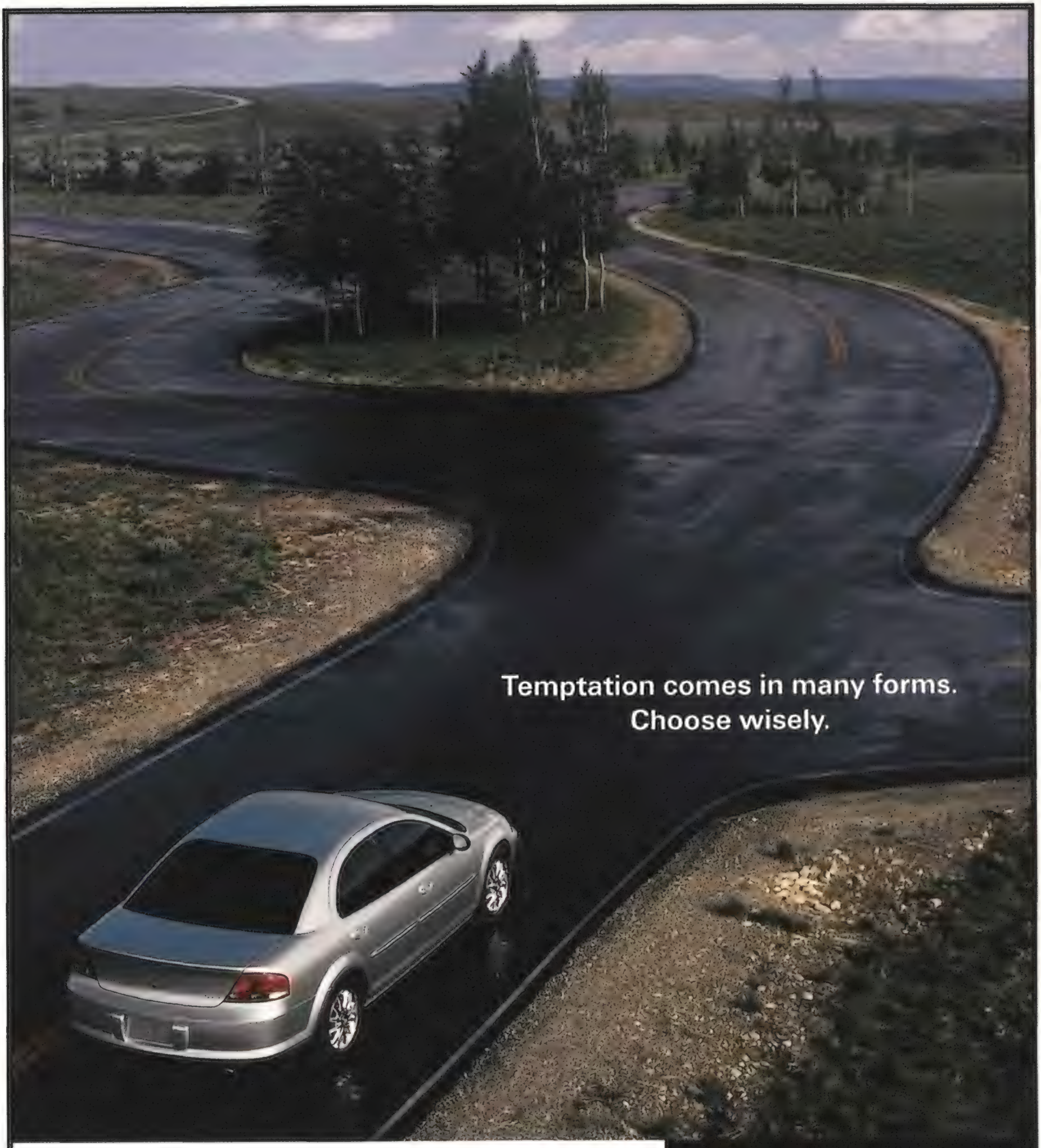
Although his Bob's Big Boy has received the State of California's imprimatur, and despite a major Modcom exhibition of his work a few years ago, McAllister, as with most architects who built coffee shops and casinos instead of city halls and avant-garde homes, has struggled with the notion of his own historic importance. His drive-through restaurants, he once said, were a "pebble in the lake, a spit in the ocean," the products of a "modest office."

Only lately has Modcom's veneration pulled him toward a reassessment. "My work may not have impressed a lot of people back then," he muses, the lights of the traffic outside reflected in his bifocals. "But it certainly does now."

Snapshot #2: Beneath the gravity-defying roof of Silver Lake's 1958 Astro Family Restaurant, the Modcommers hold forth on the fate of the Mapes, which, but for McAllister's role, might be well beyond their orbit. "It's supposed to be demolished next month," Nichols says.

"I can't understand that, man!" John English exclaims.

"It's a gambling town, all the vices," replies Alan Leib,



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The crowd is already beginning its countdown—like Times Square at the close of the dying year.

a wiseacre filmmaker and activist originally from Chicago.

Leib proposes solutions ranging from a mining-town makeover of the Mapes to its acquisition by hipster hotelier Andre Balasz, who did such wonders with the Chateau Marmont Hotel in West Hollywood. By the meeting's end, Modcommers are almost jocular as they contemplate a road trip to witness the demolition. "Five, four," Nichols starts the mock countdown. "Waaaiiit!"

Designed c. 1951 by the Bright Light Neon Company, the towering Circus Liquor sign in North Hollywood is on a Modcom "city points of interest" tour.

ON A WINDSWEPT WINTER AFTERNOON, BERET PULLED DOWN to her eyes, Gretchen Spence is again speaking into a TV camera, but this time, not for "Greed."

"We just want to get a sense of what you guys are doing here," says a perky correspondent, accosting Spence and the other Modcommers who have driven through ten hours of California desert and Sierra snow to behold the Mapes Hotel in its final sunset.

"I've seen the Mapes only in postcards," replies Spence, "but it's more beautiful than in pictures. I'm glad we saw it, but I don't know if I'll be able to watch it be blown up."

Bulldozers are still chewing at the hotel's innards, and puncture wounds to admit the explosives pock its facade. The Mapes implosion will be handled by Controlled Demolition, Inc., the same family-owned business that brought down the Las Vegas Sands.

For their farewell dinner, the Modcommers retreat to the recesses of Trader Dick's, a Polynesian restaurant in nearby Sparks. Surrounded by dried blowfish and the silent screams of tiki gods, they roast the Reno City Council for destroying the hotel. The following morning they traipse through the neon iridescence of Reno's Virginia Street. Nichols sports a tweed hat and crimson bow tie; Gould's freezing cheeks are wrapped in a frayed scarf. The birds who have been the Sky Room's sole tenants these past two decades wheel around the doomed hotel. "Where's the Audubon Society?" Spence asks. "Let's get a protest together."

The group stakes out a partially obstructed view on a bridge already thronged with amateur photographers and tipsy revelers. As the Mapes' 8 A.M. execution nears, Nichols places a last cell-phone call to Wayne McAllister; but nobody answers. As Nichols snaps the phone shut, the crowd begins its countdown—like Times Square at the close of the dying year.

A series of detonations pierces the air. For about five seconds, the Mapes remains upright, as if the unseen firing squad had shot off only blanks. Then the rear wall of the structure starts swooning into the basement, and the roar of a distant surf becomes a cacophony of bursting glass and collapsing concrete. The front of the Sky Room clings to its commanding view while its three other sides are already well on their way down. Then it, too, surrenders its brave face; the majestic turrets and plate glass fold into a heap of debris readable in Charlene Gould's crestfallen face. "Oh, baby," she groans, burying her head in Nichols' chest. They have only a moment until the brown cloud sweeps across the river. Without thought, they run, he in his bow tie, she in her faded scarf, as the Mapes, in granular form, fills their nostrils. A few more steps, and the cloud has overtaken them. Stumbling, unseeing, still fleeing, the Modcom couple dissolves into dust.

Architect Wayne McAllister died in Arcadia, California, on March 22, 2000, at age 92.

Ed Leibowitz is a writer at large for Los Angeles *magazine. Photographer Marshall LaPlante is also based in L.A.*

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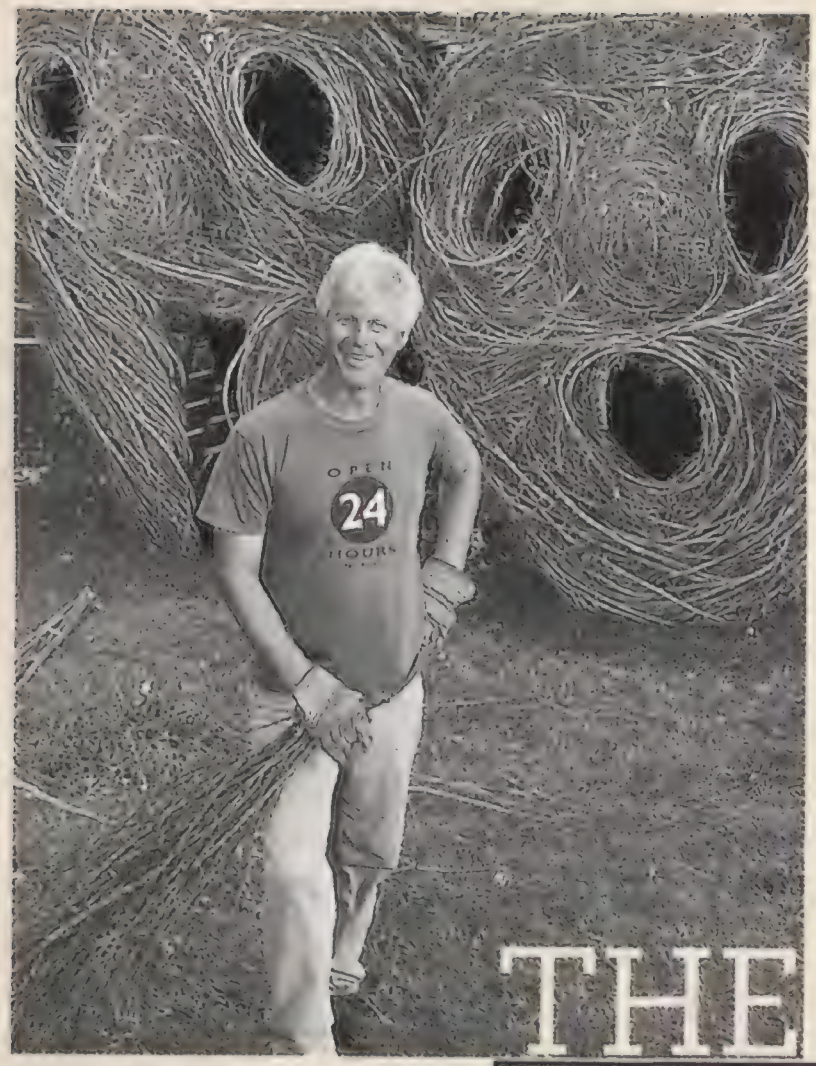

THE Twigm

IF PATRICK DOUGHERTY SHOWS UP IN TOWN, HE'S THERE TO MAKE ART—WITH A TWIST—OUT OF STICKS

PATRICK DOUGHERTY, A MAN WHO builds sculptures out of sticks, has been on the road constantly over the past decade. He travels to places as varied as Weitzelsdorf, Austria, and Grand Rapids, Michigan, making fanciful forms like *Jug or Naught*, with which he is seen at left. No hardware binds the wood. Instead he twists sticks, and they tangle up just enough so that each supports the structure. Last January truckloads of sticks arrived at the Smithsonian's National Museum of Natural History, where Dougherty was asked to create something in one of the hallways while visitors watched. His work *Watchamacallit* evolved as people came by and made suggestions. But in a museum bustling with visitors, "I had to be careful not to accidentally wind someone into one of the woven forms," he says. None of his work lasts, of course; every sculpture ends up in the wood chipper. For a time, however, it captures the imagination, as the passerby ponders the idea of twisting together a stick or two. —*Beth Py-Lieberman*

In the gardens of a castle in Weitzelsdorf, Austria, willow saplings formed jugs and a teapot in *From The Castle's Kitchen*, 1999 (top). Maple sticks in *Sittin' Pretty*, 1996 (above left), at the South Carolina Botanical Garden, evoked the classical architecture of Donato Bramante's Tempietto in Rome. Sticks in the shape of Dougherty's North Carolina cabin were cast against the New York City skyline in *Homebound*, 1990, at Socrates Sculpture Park.

GALLERIE JUDITH WALKERS; SOUTH CAROLINA BOTANICAL GARDEN, CLEMSON, SC; DENNIS COWLEY; PP. 124, 125 DAVID FERRIS

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Though biological in appearance, *Cell Division*, 1998 (top), was more a playful pun, crafted on the side of a building that was once the county jail and is now part of the Savannah College of Art and Design. Visitors to the Smithsonian's NMNH sometimes sneak a shake of the sticks of *Watchamacallit*, 2000 (above left), to test its strength. *All Wound Up*, 2000, at the Arnoff Center in Cincinnati, was built for a weaving guild convention.

PATRICK DOUGHERTY; CHIP CLARK/NATIONAL MUSEUM OF NATURAL HISTORY, S.I.; TONY WALSH

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Vincent van Gogh, *Self-Portrait*, 1889

National Gallery of Art, Washington. Collection of Mr. and Mrs. John Hay Whitney, 1998.

An alchemist searches for the secrets of life in this 17th-century painting. A seminal work of science, the Principia (below), may owe a debt to the dark a

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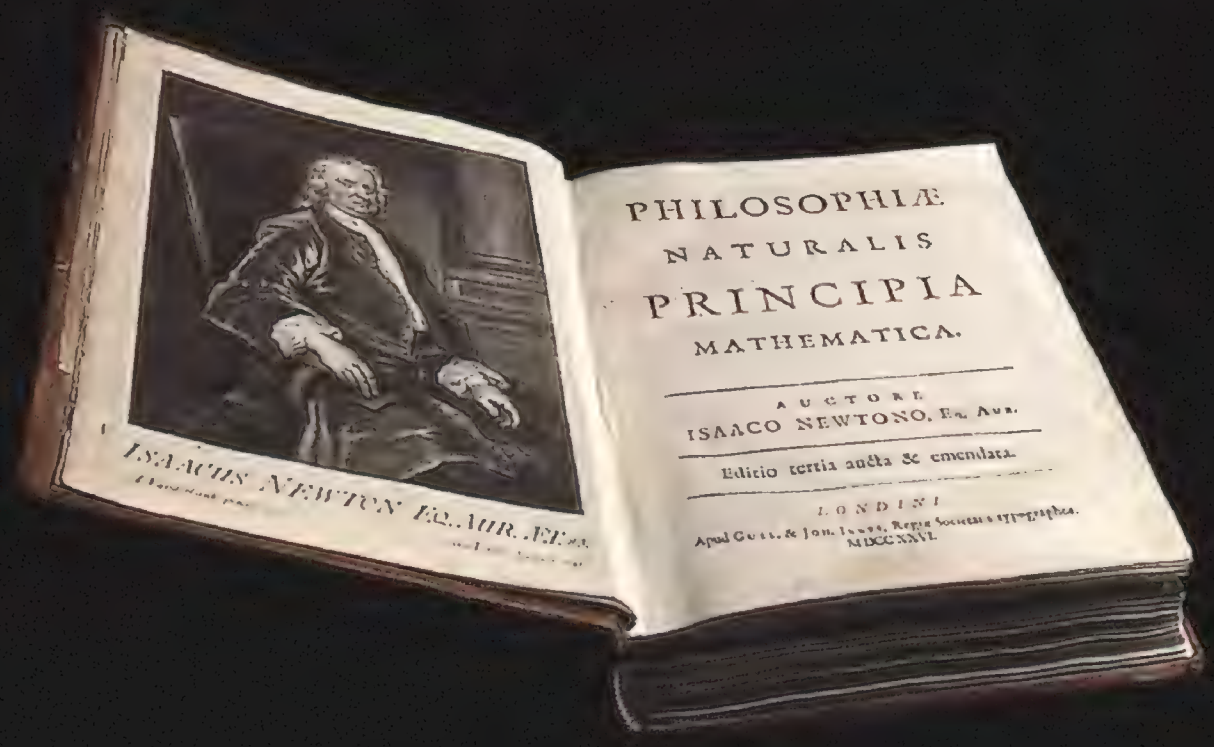

BY JENNIFER LEE CARRELL

WE'VE ALL GROWN UP WITH the story of the apple plunking Isaac Newton on the head, giving him a fruitful idea about gravity. Though it probably did not hit him, that fabled apple almost certainly did fall: Newton himself repeated the story several times. It was not, however, his only source of inspiration for the idea of gravity.

Newton was a pillar of the scientific revolution, arguably the greatest scientific thinker our species has ever produced, but he was also an alchemist. According to some scholars, his pursuit of the secrecy-shrouded, somewhat disreputable teachings of alchemy contributed to his discovery of the workings of gravity. Alchemy also shaped his thinking about the structure of micromatter, a subject for which he is less famous, but on which he came remarkably close to the mark. Such notions have never delighted the world of science.

Like most alchemists (and a few wizards of Harry Potter's world), for many years Newton engaged in the "Great Work"—the search for the mythical substance known as the philosophers' stone, said to transform base metals into gold. Like the more pious and intellectual alchemists, however, Newton was interested not in riches but in perfection.

According to tradition that stretches back to the ancient Egyptians, Arabs and Greeks, the philosophers' stone perfects all matter it touches. If that matter is a metal, the philosophers' stone turns it into gold. If that matter is a human being, however, a little taste of the philosophers' stone (more often thought to be a liquid or a powder than a stone) will work as a cure-all, and maybe even as the elixir of life, an equally fabulous substance said to restore youth and prolong life indefinitely. For the most devout alchemists

in a highly religious age, the Great Work amounted to nothing less than a quest for the agent—and possibly even the process itself—through which God worked in the world.

The philosophers' stone was also said to have strange powers of attraction; it was this power, say some scholars, that Newton transmuted into the science of gravitational force acting at a distance.

In search of Newton the alchemist, I have come to his alma mater, Trinity College of Cambridge University. At my feet, a wasp bumbles around the sweet ridges of a half-eaten apple. Perched on a low wall strung with tourists, I see a tiny lawn that erupts into one small apple tree. Beyond, the grass presses up against a gabled building slung between the stone lace of a gothic chapel and the triumphal archway in a stone wall known as Trinity's "Great Entrance."

I blink and imagine myself back three centuries, to April 1686. The wall rears high, and the tree shrinks and disappears as the lawn bursts into a garden planted with geometric beds of herbs. Between two buttresses bracing the chapel bulges a wooden shed; when the door opens, smoke and pungent odors trickle out. Inside, Newton hunches alone over a furnace that has been burning day and night for many weeks.

He has dark eyes, a long, thin nose and an expression that some read as affable and others as obstinate; either

This image of Newton at age 46, copied from a painting by Sir Godfrey Kneller, is the earliest known portrait.

He invented calculus, broke white light into colors and designed a telescope.

way, his face is too young for the gray hair that crowns it. He is notoriously absentminded: when he remembers dinner at all, he heads for the grand dining hall wearing his church-going surplice over fallen stockings. He is meticulous, however, with his glowing crucibles and bubbling retorts filled with mercury, lead, antimony and sulfur.

This is a man who, by age 43, had already invented calculus, broken white light into its component colors and built a telescope whose design is so good it is still in use today. In 1687 he produced a book that profoundly changed the way we see the world, a book that will always stand as a crowning achievement of the human mind, the *Philosphiae naturalis principia mathematica*, known universally as the *Principia*. This work not only gave us the three laws of motion that still bear his name; it defined gravity, and provided precise mathematical equations by which it could be measured. It was heralded across Europe as revolutionary. Nonetheless, though Newton's mathematical arguments astonished the few who could follow them, his hypothesis of gravity roused dismay and even disgust.

Natural philosophy (as science was then called) had declared an absolute separation between matter and spirit, and limited its attentions to the material world. Respectable natural philosophers were supposed to discover and describe rational physical causes for natural phenomena. While Gottfried Wilhelm Leibniz and Christiaan Huygens, the reigning kings of the scientific community, admired Newton's math, they sniffed that his so-called "force" of attraction was no more than a traitorous return to explaining the natural world by means of "occult qualities."

DERRICK E. WITTY/NATIONAL TRUST PHOTO LIBRARY, LONDON; P. 130 GRANGER COLLECTION; P. 131 JAMES SUGAR/BLACK STAR

Hector Guimard, *Entrance to the Metropolitain*, c.1898. National Gallery of Art, Washington, Gift of Robert P. and Arlene R. Kogod. Photo by Bob Shelley, courtesy National Gallery of Art, Washington.

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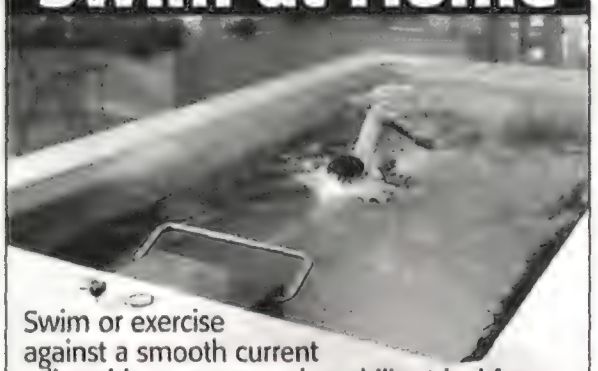

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Alchemists used strange words and symbols to describe reactions. Here the green lion (representing the mysterious material called Magnesia) devours the sun.

The doubters were closer to the truth than they knew. Practitioners of alchemy proudly billed it as an occult art whose secrets could be unveiled only by a deserving elite. In the privacy of his walled garden, Newton strove to become one of those proud few; his obsession with alchemy was an incandescent love affair that burned for nearly 30 of the most scientifically productive years of his life. By the time he died in 1727, he had spent untold hours experimenting over his furnaces. He had also amassed one of the finest private alchemical libraries ever collected and had written well over a million words on the subject.

. . . a gorgeous edifice streaming with light and filled with orderly ranks of angels, planets and stars dancing in circles.

Neither the science nor the alchemy could have been predicted. Isaac Newton was born in a manor house in the village of Woolsthorpe on Christmas Day 1642, three months after the death of his father, a farmer who signed his name (also Isaac Newton) with an *X*. Tiny enough to fit inside a quart pot, young Isaac was not expected to survive. He did, of course, his life beginning the very year that Galileo's ended.

Across millennia, European thinkers had built up a conception of the cosmos as a gorgeous edifice streaming with light and filled with orderly ranks of angels, planets and stars dancing in perfect circles for the glory of God. Almost exactly 100 years before Newton's birth, Copernicus had shoved Earth from the center of this cosmic stage with the revolutionary

Opposites (male and female, day and night) are united under a star representing the philosophers' stone in a 16th-century manuscript.

proposal that our planet revolves around the sun rather than vice versa. And only 33 years before his birth, Kepler had destroyed the ancient belief in the heavens' perfect circular motion by showing that the planets move in elliptical orbits; a year later, 1610, Galileo demolished the notion of the heavens' perfect state of being by glimpsing moon craters and sun spots through his telescope. At the time of Newton's birth, an architectural plan of the cosmos thousands of years in the making had been shattered, but no new system had replaced it.

Newton grew up ignorant of the tremors shivering through the intellectual world. Not until he reached Cambridge did he run across the work of the French philosopher and mathematician René Descartes. The year that Newton turned 2, Descartes

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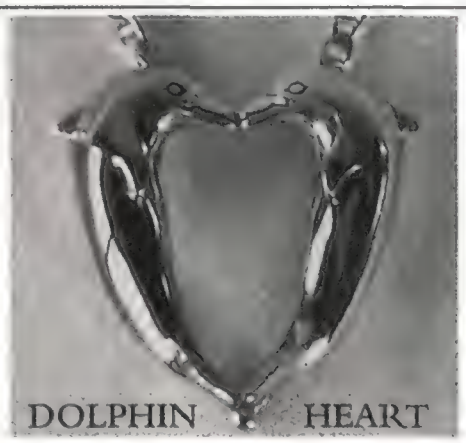

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Newton uses a prism to break sunlight down into its component colors. This achievement alone would have made him famous.

had finally proposed a new understanding of physical reality in his *Principia Philosophiae*. During Newton's childhood, the educated classes in Europe were busy grasping the notion that the world was one vast machine built from tiny, uniform particles in motion. When Newton discovered this system, now called Cartesian mechanical philosophy, it launched his genius. As Wordsworth later put it, Newton's mind went "for ever Voyaging thro' strange seas of Thought, alone."

Newton came to Descartes with a flexible mind at a time when Descartes' ideas were still radical new theories rather than revered doctrine: there was a lot of room for genius to move in. And move Newton did, teaching himself enough math to not only follow Descartes but to pinpoint the flaws in his arguments. Much of Newton's ensuing work, including the pointedly mathematical title of his own magnum opus, bears the marks of a competitive need to surpass the Frenchman.

At Trinity, Newton's cat grew fat on food he forgot to eat; in pursuit of truth, Newton often disregarded danger as well as dinner. Experimenting with optics, he once stuck a bodkin, or large blunt needle, as far back between his eye socket and his eyeball

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as he could (the picture he drew in his lab book is intensely disturbing); he also stared into the sun until he nearly blinded himself.

Voltaire later reported respectfully that Newton said he solved problems "by thinking on them continuously"; the Master of Trinity College worried that he might "kill himself with study." Instead, eight years after he arrived at Cambridge, the university appointed him, in 1669, at age 26, Lucasian Professor of Mathematics, still one of the most prestigious posts in the scientific world (it's currently held by Stephen Hawking).

The new Professor Newton had made his career as a natural philosopher, but the Cartesian system that so entranced him posed as many riddles as it solved, and Newton knew it. For devout men like Newton, a major problem with Descartes' system was that it left no room for God: in his zeal to separate matter from spirit, Descartes had decreed God an absentee landlord who had built the clockwork cosmos and then absconded to gaze on his handiwork from afar.

For those not ready to banish divinity, alchemy offered an alluring alternative. The alchemical world was more like a plant or animal than a machine. "This earth resembles a great animal," Newton himself would one day write in a manuscript now in the Smithsonian's Dibner Library; it breathes in "Nature's universal agent, her secret fire" and exhales gross air. All matter, whether animal, vegetable or mineral, said the alchemists, was growing, mating, reproducing, aging, decaying and dying, only to be born anew in an endless chain of life.

The year that he became Professor Newton, the small-town-scientist-newly-made-good took his second trip to London. He bought two furnaces, glassware, chemicals and a six-volume anthology of alchemical writings called the *Theatrum Chemicum*.

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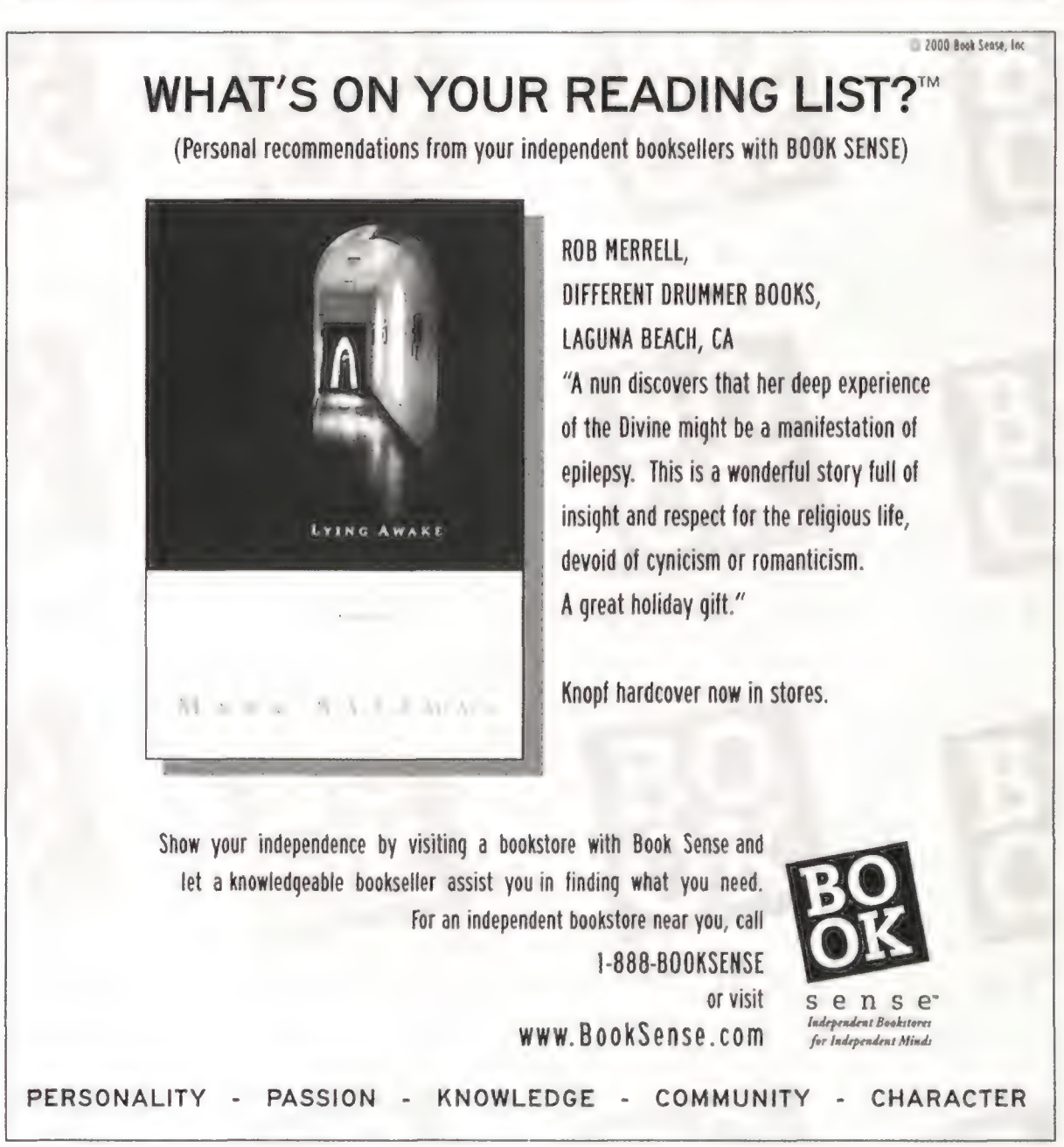
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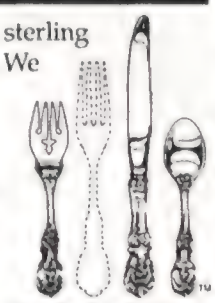

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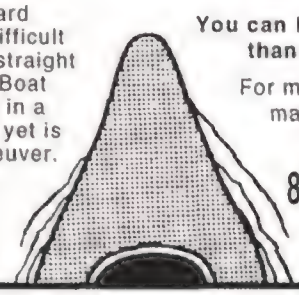

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Then he sped back to Cambridge and went to work.

At an absurdly small table for six in Trinity College's palatial Wren Library, I run my fingers down pages Newton himself dog-eared and decorated with notes: pages that babble in English and Latin about shining red oils, magical compounds of sulfur and mercury, and alchemical retellings of the Genesis creation story.

Ancient symbolic links between gods, planets and metals led alchemists to couch their recipes as myth, and to read all myths as covert alchemical recipes: Jupiter was a code name for tin, as well as the name of the king of the gods and the largest of planets. Saturn could mean lead, Venus copper, Mars iron, and Mercury mercury. Diana might mean the moon, or silver, or both, while the sun indicated gold. Page after hallucinatory page, dragons, doves, eagles and lions fight and fly and devour each other, all the while changing colors, as the solvent in one experiment that Newton described takes on "a dark red or yellow colour wth black & blue spots," glimmering with the entire rainbow all at once.

Newton apparently believed that all this hothouse imagery encoded in different ways one true chemical process that would produce the philosophers' stone. In an effort to translate the poetic chaos into practical laboratory terms, he collected and compared all the alchemical writings he could lay his hands on, probing alchemical literature to a degree unequaled by anyone before or since. He indexed it; what began as an 8-page document with 115 headings eventually swelled to more than 100 pages with 879 headings listing 5,000 references.

In the lab Newton used the same symbolism he spent so much time trying to decode in other people's writings. "I made Jupiter fly on the wings of the eagle!" he exclaimed in May 1684; in this case it seems fairly certain that he was talking in code

about some process of vaporizing tin. But a lot of his lab notes remain impossible to decipher with any reasonable certainty. "Dissolve volatile green lion in the central salt of Venus and distill," the man who invented calculus jotted in another notebook. "This spirit is the green lion the blood of the green lion Venus, the Babylonian Dragon that kills everything with its poison, but conquered by being assuaged by the Doves of Diana, it is the Bond of Mercury."

He was still Isaac Newton, however, and as his biographer Richard Westfall wrote, when he walked into the lab he "did not leave his special gifts at the door"; instead, he submitted alchemy's mysteries to precise quantitative analysis. The scientist who had measured colored rings of light in hundredths of an inch now divided an ounce into 480 grains and worked with such minute amounts of chemicals on a mirror, using the point of a knife.

In modern terminology, he spent much of his time at the furnace refining ores, making alloys, converting substances from one state to another (from solid to gas to solid again, for example), or separating the elements of one compound and then recombining them with other substances. If what he thought he was doing is murky, what he hoped to achieve is murkier still. If he composed any general treatise describing a unified theory of alchemical science—a *Principia chemica*—it has not survived. Scholars have had to reconstruct his alchemical theories and research from notes now scattered in libraries from Jerusalem to Los Angeles.

The link some scholars see between Newton's alchemy and the universal law of gravitation lurks in the philosophers' stone's hypothetical power to draw into itself the alchemists' life-giving universal spirit. In the Manuscripts Reading Room of the new British Library in north London, I stumble awestruck through the

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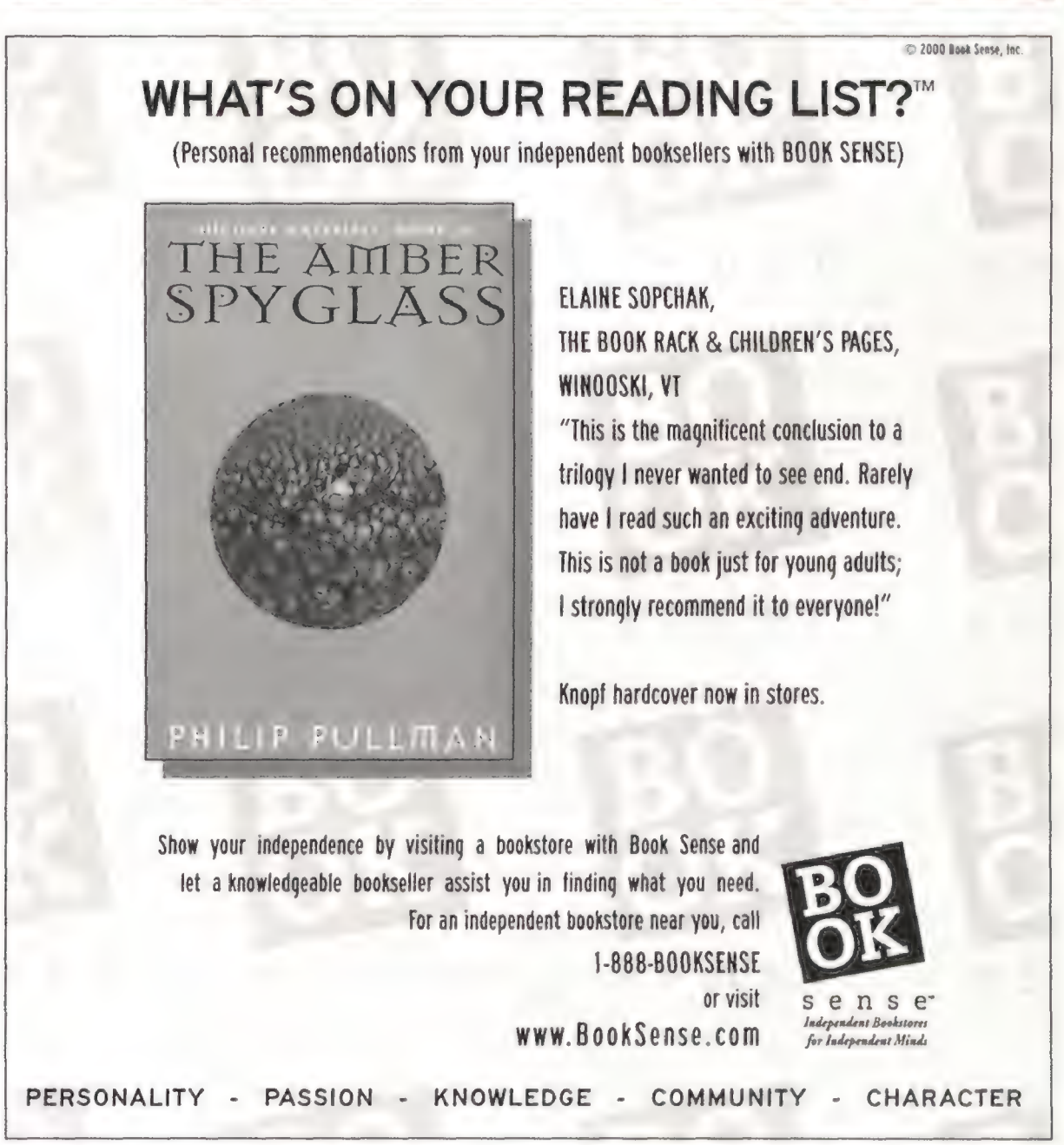
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A scion of the original apple tree (legend has it) frames Woolsthorpe, the manor house where Newton was born in 1642.

cramped scribble Newton used to fill a small brown book with notes on the philosophers' stone from the alchemist Basil Valentine. "He that learneth to know exactly this golden seed in this Magnet," Newton wrote, "he hath the true root of life."

Both in lab and library, Newton focused his research on the dull gray substance that he called antimony, but we call antimonial ore, or stibnite; Newton identified it with the mysterious material his favorite alchemical authorities termed "green lion" or "Magnesia" (Latin for "magnet"). This ore had long been precious to alchemists for its use in refining gold to a very pure state, but Newton was much more interested in its supposed powers of attraction.

Though not quite the philosophers' stone, antimony was said to attract the universal spirit or "active principle." Newton wanted to isolate at

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"the heart of the lion" the specific metallic form of this universal spirit, something the alchemists called "philosophic mercury" (not to be confused with the common element). To do so, he spent a lot of time carefully refining antimonial ore to produce the metallic element in a rare form, showing silvery crystalline veins radiating around a central point. For years this "star regulus" lay at the heart of his alchemical research. He was experimenting with it just before plunging into the *Principia*; when he interrupted his work in 1686, it was to experiment with the star regulus of antimony once again.

Newton did not find the universal law of gravitation in alchemy. He did find in his occult research, however, the key notion of an "active principle" that could work at a distance, a provocative concept that lay well beyond natural philosophy's approved channels of thought. This is not to say that gravity itself is occult; it is a regular, mathematically predictable phenomenon by which two masses attract each other. In contrast, the philosophers' stone is a mass that mysteriously attracts spirit. It took all of Newton's mechanical and mathematical genius, as well as prompts from other, more conventional minds, to transmute this arcane principle of attraction at a distance into a quantified science.

Unpublished scraps fluttering around the edges of the *Principia* hint that he originally meant his magnum opus to explain particle as well as celestial physics. The modern concept of atomic elements still lay over a century in the future, but atomism—the idea that matter is built from tiny particles—had been around since the Greeks, and was fundamental to Cartesian mechanical philosophy. "Nature is exceedingly simple and conformable to herself," he wrote in a conclusion that was cut before publishing. "Whatever reasoning holds for greater motions, should hold for lesser ones as well." Planets, he knew,

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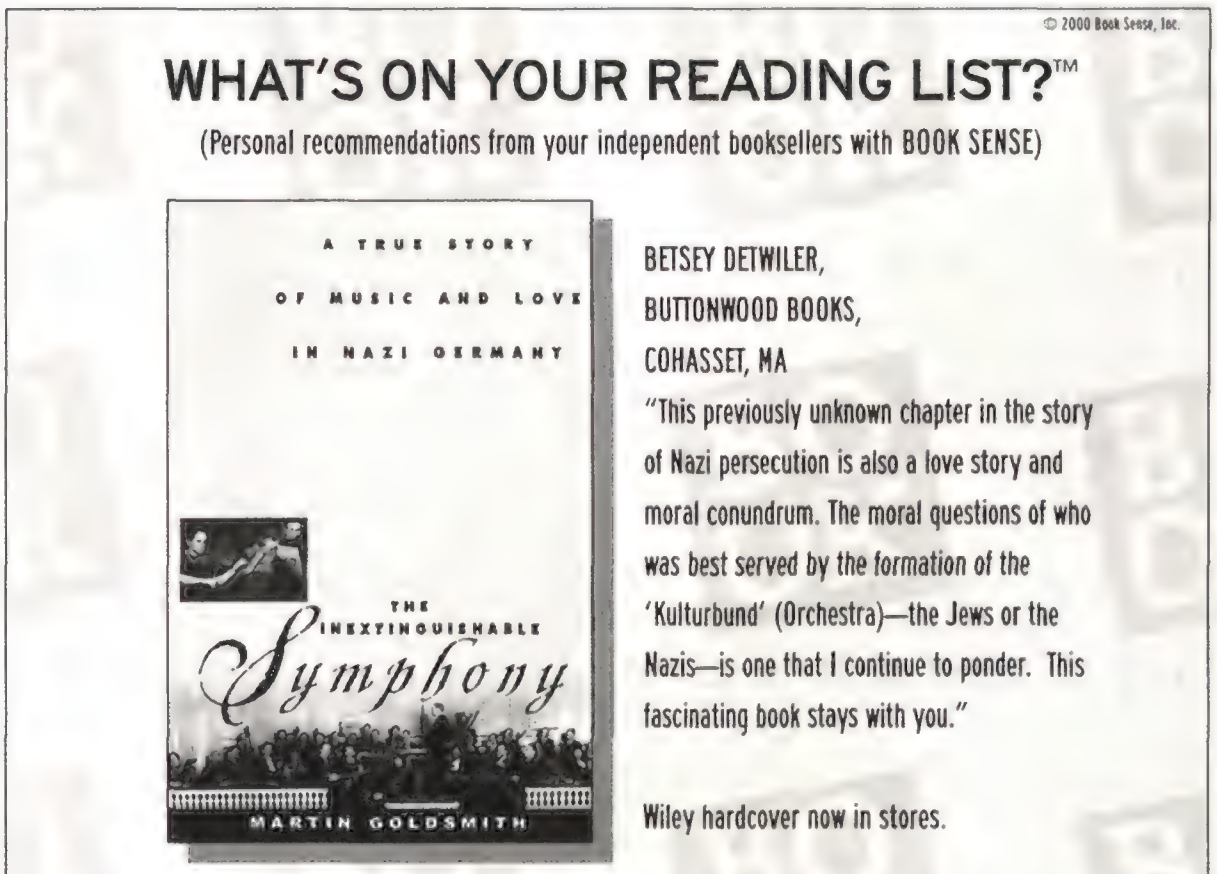
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depend on the attractive force of gravity for their orbital motion, and smaller but still sensible bodies depend on attractions and repulsions too. Newton went on to speculate that the tiniest building blocks of matter depend on analogous, "as yet unobserved" forces.

Detectable bodies, he conjectured, were made of relatively large particles joined together in tenuous nets, an image he borrowed from alchemy; "vulgar" or "mechanical" chemistry involved rearrangements at this level. These particles were in turn made of smaller particles, and those particles, of still smaller particles, on down to the smallest, indivisible building blocks of matter. "Any body can be transformed into another, of whatever kind," he wrote in the first edition of the *Principia*. All transmutation took, he thought, was dissolving matter into its ultimate parts and restructuring them, something that could only be done, he wrote elsewhere, by alchemy's "more subtile, secret & noble way of working."

Less than two months after his last dated experiments, he packed his bags and moved to London.

In hindsight, Newton's nested system of micromatter is not a bad abstraction of molecular, atomic and subatomic structures bound by forces of attraction and repulsion. Living more than two centuries before the building of high-energy accelerators, however, he had no hope of finding what he was looking for. But Newton didn't know that, and as soon as he finished the *Principia*, he scuttled back into the alchemical lab to unlock the secrets of micromatter.

This time, after six years of frenzied work, he very nearly did kill himself with study. In June 1693 he was hard at work, vaporizing mercury and lead. At about this time, he thought he had succeeded in making the philosophers' stone: "Thus you may multiply each stone 4 times & no more," he dashed with excitement, "for they will then become oyels shining in ye dark & fit for magicall uses."

In September the bubble burst for good, and Newton suddenly withdrew from the world. In a fit of paranoia, which he later termed "a distemper that much seized his head," he hurled angry, disjointed letters at the philosopher John Locke and the diarist Samuel Pepys, accusing them of trying "to embroil me wth woemen," and breaking off the friendships.

He was under enough emotional and mental stress to explain a nervous breakdown, but he may also have poisoned himself with his alchemy, becoming "mad as a hatter," because it was exposure to the mercury used in processing felt that made hatters so proverbially loopy.

By the spring of 1694, Newton had emerged from the storm shaken but sane. Once more, he returned to his lab, but as suddenly as he had begun his alchemical work, he broke it off. Less than two months after his last dated experiments in 1696, he abruptly packed his bags and moved to London to become the Warden and then Master of the Royal Mint. In a deliciously ironic career move for a retired alchemist, he made himself a wealthy man presiding over a complete recoinage of the kingdom's gold and silver. Though he kept lightly in touch with alchemical circles in London, he never again seriously pursued the Great Work himself. Having briefly believed he had touched the sun, his disillusionment seems to have run deep.

When Newton took up alchemy, his fascination was no unique quirk. In the 17th century, chemistry and

alchemy were not yet distinct. Newton, in fact, was led to the subject through the writings of Robert Boyle, whose own flirtations with alchemy have been pushed into the shadows in favor of his reputation as the father of modern chemistry.

Alchemy's days as a serious subject were numbered, however. When Newton died in 1727, his executors asked Dr. Thomas Pellet to determine which of his papers were publishable. Time and again Pellet scrawled across sheaves of Newton's alchemical papers: "Not fit to be printed."

As time passed, this need to guard Newton from the taint of his alchemy strengthened. While editing Newton's "complete" works in the late 18th century, Bishop Samuel Horsley passed over his million alchemical words in silence. By 1855, Sir David Brewster, Newton's first major biographer, could not contain his horror. "We cannot understand how a mind of such power," he raged, "could stoop to be even the copyist of the most contemptible alchemical poetry, and the annotator of a work, the obvious production of a fool and a knave." Then he, too, subsided into silence.

Ironically, it was what Newton did not find, rather than what he did, that has vindicated his alchemical research. For though he could not demonstrate the structure of micromatter or achieve transmutation, 20th-century physicists have done both.

In 1901, British scientists Ernest Rutherford and Frederick Soddy found that radioactive decay could passively cause one element to change into another. Watching this process, the two stood transfixed until Soddy blurted out, "Rutherford, this is transmutation!" In 1919 Rutherford was able to announce that he had forced transmutation by bombarding nitrogen nuclei with alpha particles to produce oxygen; in 1937 he titled his last book *The Newer Alchemy*.

In the wake of these discoveries, interest in Newton's alchemy has

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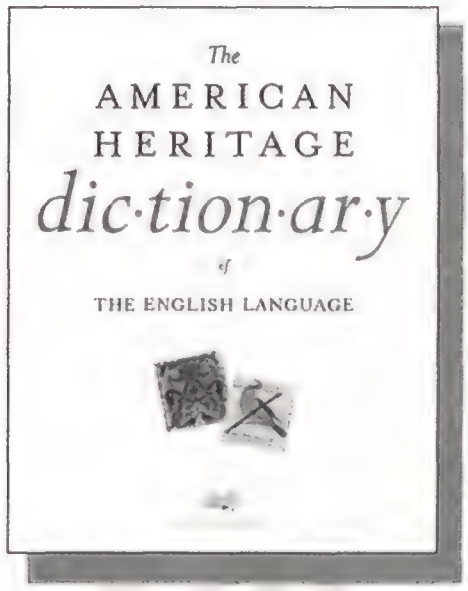

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risen steadily. As late as the 1880s, the University Library of Cambridge refused to accept his alchemical papers, even as a gift, deeming them "of no scientific value." By the 1970s Newton's alchemy had become the subject of serious scholarly research by Betty Jo Dobbs and Karin Figala. Though many still balked at the notion, some historians of science had begun to see links between Newton's alchemical dreams and the development of modern science.

Traces of Newton's life are not hard to find. His favorite London coffeehouse has morphed into the Devereux, a Dickensian pub full of lawyers, but in his honor, I order black coffee. In Jermyn Street, I finger fine-tailored shirts for sale in the building that was once his home. At the Tower of London, I walk the outer walls, which housed the mint he ruled with more of an iron hand than a golden touch. Up in Cambridge, Trinity once displayed his furnace-filled lab to visitors, but it is long gone, replaced by a scion of the infamous apple tree. Beyond his books, I despair of finding any trace of Newton's obsession with alchemy.

Then, on my last afternoon in London, I duck into the quiet of Westminster Abbey. Facing the western doors, a baroque monument of Newton swirls upward; on a panel beneath his languidly reclining bare feet, naked cherubs in bas-relief toy with his great discoveries. At the far right side, I finally find what I am looking for and smile: one of the imps blows into a fiery furnace. Guidebooks suggest that this is an assay furnace, representing Newton's years at the mint, but the discreet alchemist who designed and built brick furnaces just like it would surely have appreciated this tribute to his labors over the fire.

Jennifer Lee Carrell of Tucson has written for SMITHSONIAN *on fire-fighter training and Shakespeare's popularity in the Wild West.*

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Sister Revolutions: French Lightning, American Light

Susan Dunn

Faber & Faber, $26; $14, paper

WHAT EVERYONE likes to remember about the French Revolution is that it proclaimed the rights of man, including equality for all under the law. By comparison, its slightly older and wiser sister, the American Revolution, is often dismissed as a mere war of independence. *Liberté, Egalité, Fraternité*, the words of its famous motto, have a more populist ring than "we hold these truths to be self-evident." Besides, the infant French republic swiftly abolished slavery, gave women the vote, legalized divorce and granted civil rights to Jews, Protestants and illegitimate children.

What everyone would like to forget is what happened next. The king was executed. *Le peuple*—as in power to the people—took over. During the following frenzy of radical reform, Gallic paranoia and political correctness, at least 25,000 French citizens were put to death. Citizen Robespierre, chief theorist and energizer of the bloodbath, described the Terror as "nothing other than prompt, severe and inflexible justice."

"Mercy had become treason," author Susan Dunn comments, "democracy had become tyranny." And so, in its 1799 plebiscite, "the exhausted people of France" chose order and the rule of law. By an overwhelming vote (3,011,007 to just 1,562) they adopted a constitution that made the country a virtual dictatorship. Enter the emperor Napoleon from stage right. France did not have republican government again until 1871.

Needless to say, the American Revolution fared much better. Americans had many advantages, of course. Fewer people (4 million to France's 24 million), no oppressed urban mob, and political experience in both the short-lived Continental Congress and long-established colonial legislatures. In the realm of ideas and political solutions, which are the author's main concern here, the American success was (as it still is) largely due to James Madison's understanding of the limitations of human nature. "If men were angels," he wrote, " there would be no need for government."

Only under a political system where many conflicting interests kept any single group from taking power could political freedom survive. Whence all those famous checks and balances, the two houses of Congress, the trio of separate powers, executive, legislative and judicial.

The political thought and experience of America's Founding Fathers, available to French leaders, were scornfully rejected as unambitious. French delegates voted overwhelmingly to invest all the powers of the new government in a single, legislative body, the National Assembly.

How could they have done such a thing? Americans, then and now, tend to agree with John Adams, who felt that on their way to the Revolution, French leaders simply checked their common sense at the door. Of course it was more complicated than that, as Susan Dunn, a French-born American who teaches history at Williams College, gracefully demonstrates, comparing and contrasting the men, the manners, and the political convictions that shaped the sister revolutions. Dunn is admirably evenhanded as she dissects the political and intellectual folly of French leaders. Nevertheless, she

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clearly feels that to know all is not to forgive all. The real problem, Dunn says, was ideas run amok. French intellectuals were much taken with abstract and absolutist theories and utopian notions about government and human nature.

That spirit of the French Revolution, Dunn sadly observes, not only ruined France at the time but has laid its dread mark on every revolution since—the precedent for purging all opponents and stifling dissent. It was no coincidence that in 1918 Lenin ordered up a statue of Robespierre as decoration for the Kremlin.

For modern Americans, this tragic story makes a useful point: proclaiming rights is essentially meaningless unless the government proclaiming them is stable, broadly supported and powerful enough to protect the few from the many, as well as the many from the few.

Late in the book, Dunn herself displays a certain, dare one say Gallic? weakness for never-thwart-the-will-of-the-people theorizing. Projecting past upon present, Dunn says that Madison's "horse and buggy" constitution will no longer do for the United States. She feels that its pesky checks and balances keep the majority from making enlightened reforms. There are cases in point, but to date most of the enlightened reforms in recent years, racial integration most notably, have been made by the Supreme Court—precisely because the will of the majority had rejected them.

Everybody should read this book. It offers a lively education in a small package. Then, if there's time, reread Federalist 10 and 51, as well as Simon Schama's book *Citizens*. What the French took from the Americans, Lord Acton once wrote, "was their theory of revolution not their theory of government—their cutting but not their sewing."

Timothy Foote, based in Washington, D.C., is a contributing editor of SMITHSONIAN.

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Khanty of Siberia [p. 54]

The Tenacity of Ethnicity by Marjorie Mandelstam Balzer, Princeton University Press, 1999

Arctic Mirrors: Russia and the Small Peoples of the North by Yuri Slezkine, Cornell University Press, 1994

Siberian perspectives on protected use areas Website: www.dpc.min.dk/publications/technical/develop/wiget.html

A-Word-A-Day [p. 66]

A-Word-A-Day Website: www.wordsmith.org

Snowshoes [p. 90]

The Snowshoe Book by William Osgood and Leslie Hurley, Stephen Greene Press (Brattleboro, Vermont), 1983

Snowshoeing by Gene Prater, edited by Dave Felkney, fourth edition, Mountaineers (Seattle), 1997

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Dogs of War [p. 100]

War Dogs: A History of Loyalty and Heroism by Michael G. Lemish, Brassey's (Washington, D.C.), 1996

War Dog Heroes: True Stories of Dog Courage in Wartime by Jeannette Sanderson, Scholastic, 1997

"U.S. Military Working Dogs with Vietnam Service: Definition and Characteristics of the Cohort" by

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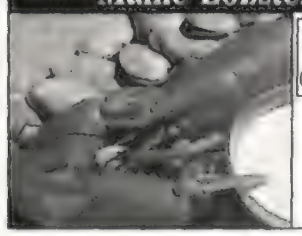
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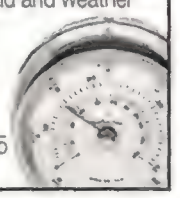

Howard M. Hayes, DVM, et al., *Military Medicine*, November 1994, vol. 159

Modcom [p. 112]

Googie: Fifties Coffee Shop Architecture by Alan Hess, Chronicle Books, 1985

Learning from Las Vegas by Robert Venturi et al., MIT Press, 1972

L.A. Conservancy Modern Committee Website: www.modcom.org/main.htm

"Stars, glamour, magic—the Mapes had it all" by Frank X. Mullen, Jr., *Reno Gazette-Journal*, January 30, 2000

Patrick Dougherty Sculptures [p. 124]

"Linear Energy: An Interview with Patrick Dougherty" by Roberta Sokolitz, *Sculpture*, March 2000

Isaac Newton [p. 130]

In the Presence of the Creator: Isaac Newton and His Times by Gale E. Christianson, Free Press, 1984

The Foundations of Newton's Alchemy or, "The Hunting of the Greene Lyon" by Betty Jo Teeter Dobbs, Cambridge University Press, 1975

Never at Rest: A Biography of Isaac Newton by Richard S. Westfall, Cambridge University Press, 1980

Isaac Newton: Adventure in Thought by A. Rupert Hall, Blackwell (Cambridge, Massachusetts), 1992

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THE LAST PAGE

The Public Bath

BY KENT BLACK

ABOUT SIX MONTHS AFTER I moved to Madrid, New Mexico, I was walking down the main street one day when I ran into Jody. She's a cowgirl/survivalist/artist—a fairly normal job description for people in this eccentric neck of the high desert. Jody complimented me on the renovation of St. Anne's, a 110-year-old deconsecrated adobe church I was in the process of adapting for use as a home. I couldn't recall her ever having visited. "Oh sure, darling," she drawled, "I always stop by for a bath when no one's around. Two weekends ago . . . I guess you was in New York City . . . I go on up there and Gypsy and Little Pete are in line ahead of me. Here. Me and Pete chipped in for the hot water cost and Gypsy's gonna drop off some sage bundles she says you need for restless spirits flying around your belfry. Bye now!"

I stood staring slack-jawed at the crumpled bill and loose change lying in the palm of my hand. Now I knew why I never seemed to be able to get rid of the tub ring.

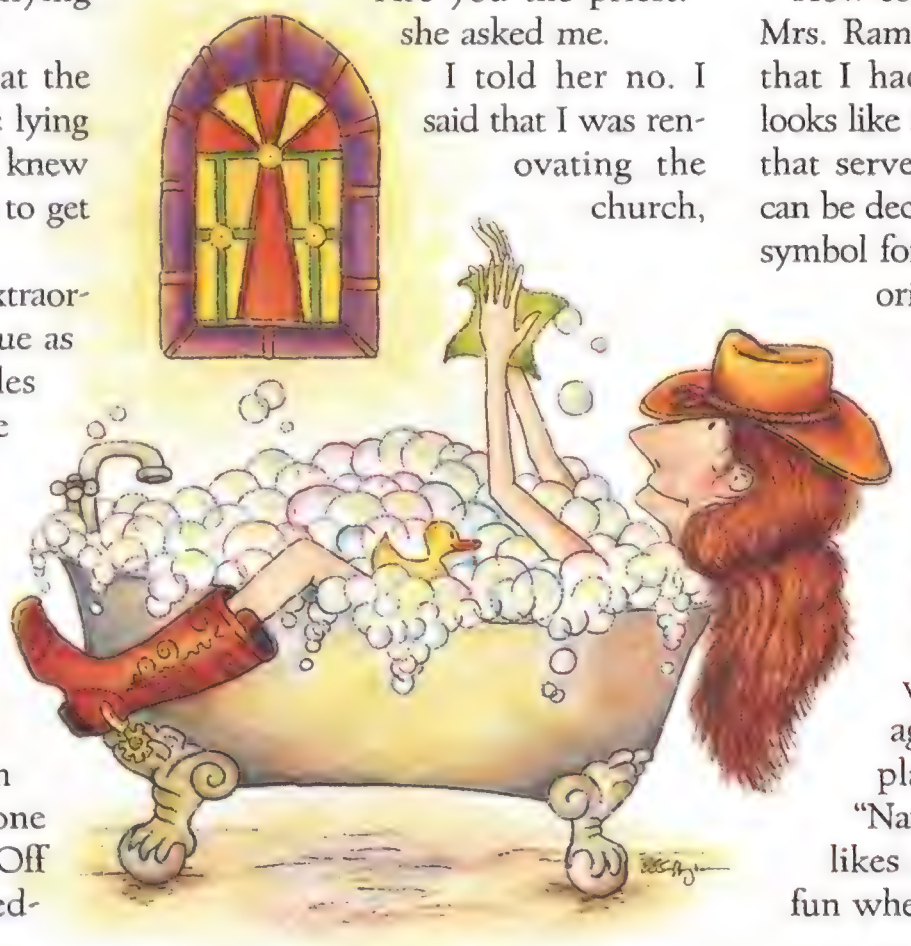
I'll admit the bath is rather extraordinary, even in a place as unique as Madrid. Located about 25 miles southeast of Santa Fe on the west flank of the Ortiz Mountains, Madrid was a coal town that became a ghost town. Today it boasts some galleries and shops; its population of 250 or so consists mainly of artists and outlaws.

On a hillside above the town sits St. Anne's. It's basically one huge room with a choir loft. Off the altar (now the master bedroom) is the vestry (now the kitchen). The bathroom is actually a greenhouse that was added on to the vestry. It has a sloped ceiling of glass panels. The tub itself is a six-foot-long claw foot. Because the town has no streetlights to obscure the night sky, one can recline in the tub and spend an entire evening staring at constellations and shooting stars.

After my conversation with Jody, I made it known that the erstwhile public bath was closed. I transformed what had been a free-and-easy church into a monastery for one.

Then Mrs. Ramirez came to town. I was refinishing the floors one morning when a big van pulled up and three or four generations piled out. A middle-aged man helped an elderly woman up the steps of the church. "Are you the priest?" she asked me.

I told her no. I said that I was renovating the church, but stopped short of telling her it was now a private residence. Since I'd emptied the place for the floor work, I offered a tour. Inside she walked around slowly, exclaiming, "Madre de Dios, que linda!" in a small voice.



At the altar, she motioned for me. "Here," she said, pointing to the steps, "is where I was baptized and my brothers were baptized and many of my cousins. And here, in 1937, is where I married."

I conversed with her son and his family on the church's front porch, leaving his mother alone to say a prayer. A few minutes later she joined us and laid her hand on my arm. "It's good you're taking care of it. When I grew up here the miners were very poor. Many people had nothing . . . except this church."

How could I help but be moved by Mrs. Ramirez? She made me realize that I hadn't bought a house that looks like a church; I bought a church that serves as my house. A church can be deconsecrated, but it remains a symbol for the community, its memories and aspirations.

And so I closed the monastery and reopened the bath. Now, however, visitors must supply their own towels and soap, scrub the tub after finishing and leave something in trade for the hot water. I saw Jody not long ago and asked her if she was planning to come over. "Naw," she shrugged. "Nobody likes all the rules. It was more fun when we had to sneak in."

BETH BUFFINGTON

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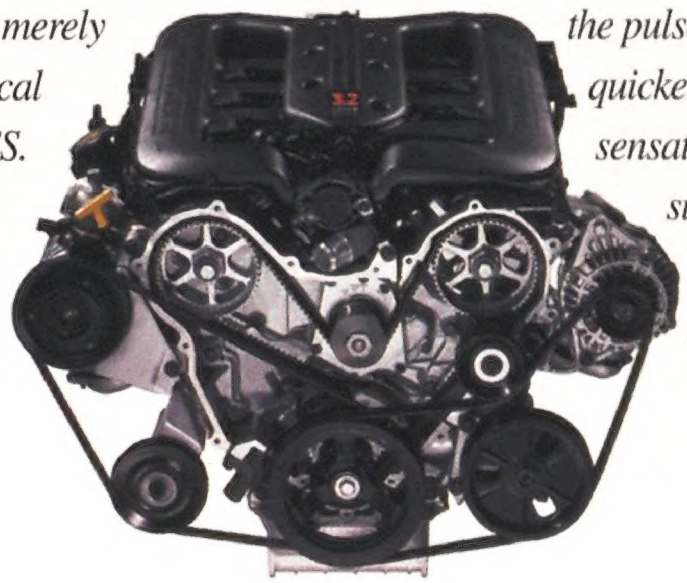

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